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ABSTRACT

Resulting from an evaluation of the Introduction to Vocations Program by Hawaii's State, district school, and community personnel, this handbook is intended to provide the necessary directions and guidelines for those schools interested in implementing the program. (The program is a restructured vocational-technical program for Hawaii's high schools, designed to provide meaningful occupational experiences in eight occupational clusters. Emphasis is placed on cooperative work experiences in industry in the advanced stages of occupational exploration.) The first section includes an overview of the total restructured vocational-technical program for the State of Hawaii, followed by a more detailed description of the Introduction to Vocational Program and its primary objectives. Another section discusses the delineated roles of each program participant at the various levels and identifies the specific function of each. Sample units of instruction for the eight clusters of occupations as well as an example of a guidance unit are the major contents of this handbook. Exemplary school level plans developed by program teams from various schools, giving time schedules for tasks that need to be accomplished for program implementation are included in the appendix section. Informational materials such as standard equipment and tool lists for the various courses of study, and task analysis procedures are also included for reference purposes. (HD)

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ED141581

INTRODUCTION TO VOCATIONS PROGRAM HANDBOOK

Vocational-Technical Education

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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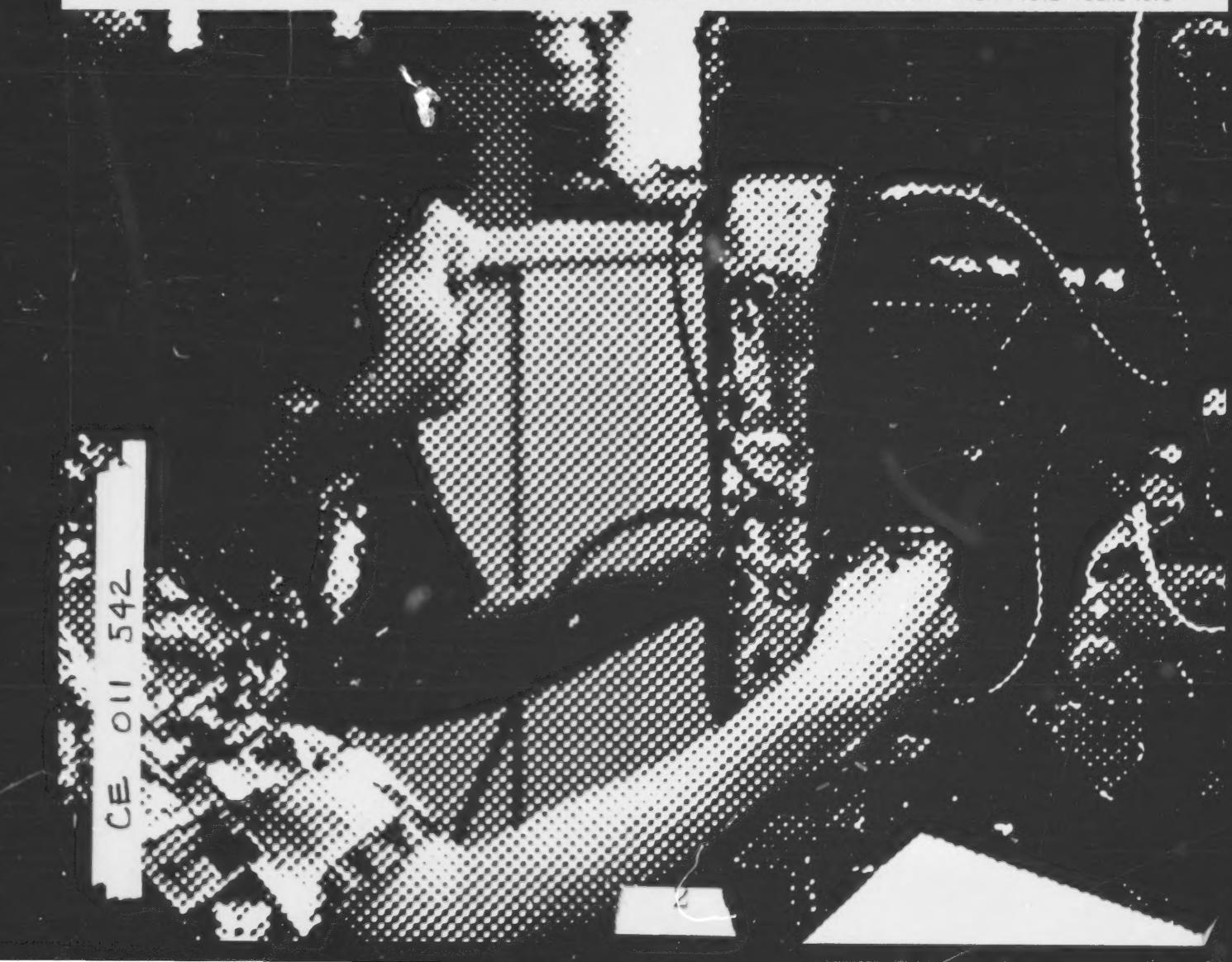

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PREFACE

In most cases, the curricula in our schools have always been in a process of change, but more often than not, the new programs were very much like their predecessors. In order to avoid this pitfall, a thorough and careful analysis and reanalysis of all existing vocational-technical programs were done. Through this process, a restructured vocational-technical education program was developed and launched in Hawaii's schools to meet the specific and various needs of differing students.

The Introduction to Vocations Program which is one of the three parts of the restructured total was designed to provide meaningful occupational experiences in eight large clusters of occupations. This program provides interested students with a chance to explore career opportunities in the vocational-technical fields. The vocational guidance component is introduced as a vital part of the program.

The Introduction to Vocations Program Handbook is the result of program evaluation by state, district, school, and community personnel. It reflects the work of many people who met in several summer workshops. Hopefully, it will provide the necessary directions and guidelines for those schools interested in implementing the program.

The first section includes an overview of the total restructured vocational-technical program for the State of Hawaii, followed by a more detailed description of the Introduction to Vocations Program and its primary objectives. Another section discusses the delineated roles of each program participant at the various levels and identifies the specific functions of each. Sample units of instruction for the eight clusters of occupations as well as an example of a guidance unit are the major contents of this handbook.

Exemplary school level plans developed by program teams from various schools, giving time schedules for tasks that need to be accomplished for program implementation, are included in the appendix section. Informational materials such as standard equipment and tool lists for the various courses of study, and task analysis procedures are also incorporated for reference purposes.

As the Introduction to Vocations Program grows in size and scope, additional materials will be developed to assist the implementors of the program. These program guidelines are flexible and will allow administrators, counselors, and teachers to make adjustments that will meet the needs of students in their particular situation.

Teichiro Hirata

TEICHIRO HIRATA
Acting Superintendent of Education

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AN OVERVIEW OF HAWAII'S VOCATIONAL-TECHNICAL EDUCATION PROGRAM IN THE SECONDARY SCHOOLS

THE RATIONALE

The rapid development and impact of technology greatly affect the lives of every person in our society today, but even more so that segment of young people whose skills, intelligence, and judgment have not yet been adequately developed. Hence, there is an urgent need now, and in the years ahead, to prepare these young people with an adequate education to meet the requirements needed to fill the vast number of jobs spawned by modern technology.

The basic philosophy of Vocational-Technical Education is to prepare the vast number of young men and women to cope with the extraordinarily wide range of responsible jobs that must be filled. It is to perform this particular mediating task that the restructured Vocational-Technical Education program was developed in our state. The needs of the individuals as well as of society are served simultaneously by making students the beneficiaries of this program.

PROGRAM DESCRIPTION

The total Vocational-Technical program is designed to offer three new subprograms to fulfill the needs, wishes, and potentialities of differing individuals in their preparation for the opportunities that exist today and will exist tomorrow in the working world. Basically, all three programs are designed to increase the options available to high school students. These options are: (1) to take employment at entry-level jobs; (2) to move toward occupational specialization at community colleges, trade and technical schools, or in apprenticeships; and (3) to continue on into preparation for professions.

Each of the three programs has its own specific emphasis although the common elements among them are the actual occupational experiences and a balance of academic subjects to go along with these experiences. The three programs and a brief description of each are:

I. Preparatory Vocational and Technical Education

A. The Pre-Industrial Preparation Program focuses on the improvement of basic verbal, mathematical and scientific skills through correlating them with concrete occupational experiences. This program is primarily for the underachieving, disadvantaged students. It is programmed to help these students to see the importance and usefulness of academic skills for performing job tasks.

B. The Introduction to Vocations Program is guidance oriented and includes knowledge about possible career opportunities as well as experiences in the various clusters of occupations. This program appeals to students with varying abilities, interests, and aptitudes as opposed to any one level of ability. In other words, a student with scientific aptitudes may pursue his interests in a highly technical field of work while another who likes to work with people may explore the opportunities in the social services.

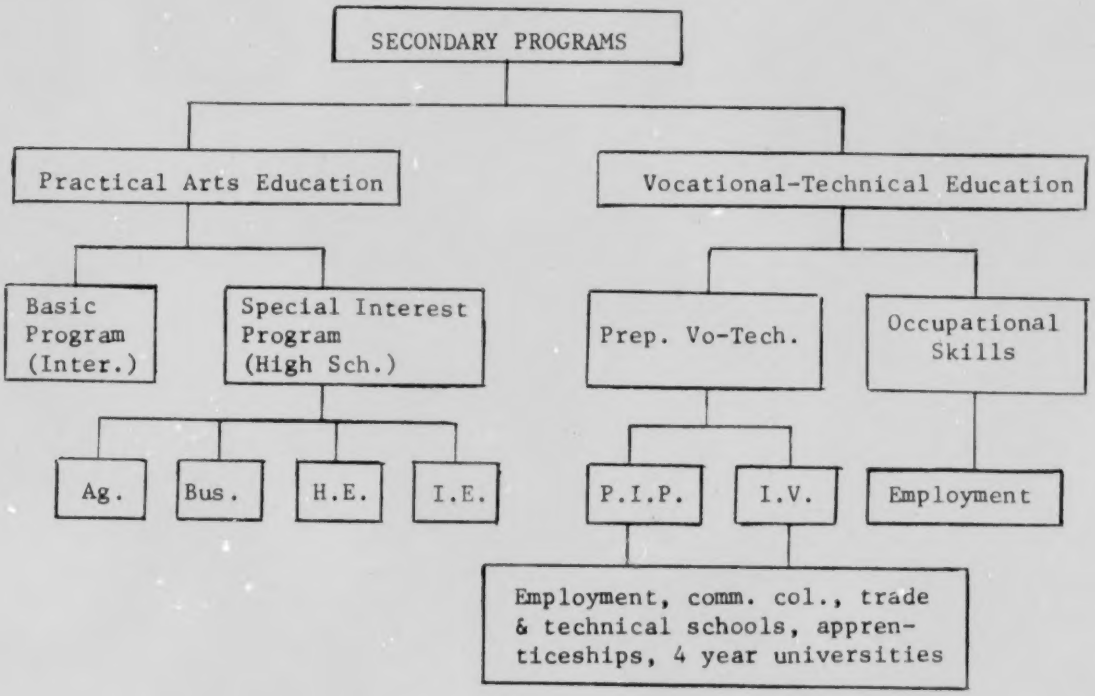
II. Occupational Skills

The Occupational Skills Program is designed to develop specific job skills and is for the handicapped students enrolled in the high schools. The special education teacher and the occupationally competent instructor will work together to help these students become employable.

The occupational experiences for the above programs will be available to an individual in eight large clusters of occupations. They are: (1) Business Occupations; (2) Personal/Public Service Occupations; (3) Health Occupations; (4) Food Service Occupations; (5) Electrical/Electronics Occupations; (6) Construction/Civil Technology Occupations; (7) Mechanical Occupations; and (8) Technical Graphics Occupations.

PROGRAM STRUCTURE

It must be noted here that the Vocational-Technical Education program is separate and apart from Practical Arts Education. The Practical Arts program is concerned with helping the individual to respond sensitively to technological developments and to cope effectively with the consequences in his personal life. The Vocational-Technical program, on the other hand, is aimed at motivating and enabling the individual to proceed purposefully in an occupational pursuit by increasing his basic academic skills and developing entry-level proficiency in a cluster of occupational skills.



(Note: The above chart indicates only the program structure and does not reflect program personnel functions nor subject matter.)

MASTER PLAN GUIDELINES FOR THE DEVELOPMENT AND IMPLEMENTATION OF THE VOCATIONAL-TECHNICAL EDUCATION PROGRAM AT THE SECONDARY SCHOOL LEVEL

The total Vocational-Technical program was developed in accordance with the Master Plan for Vocational Education which established the following guidelines:*

1. Focus on occupational needs of individuals rather than the categories of occupations; congruence between the two is clearly recognized.

2. Serve persons in all categories of occupational life.

3. Give priority to those with special needs.

4. Plan and structure to enable individuals to fulfill their personal and social goals at the same time that career goals are being achieved.

5. Treat as total education of the individual rather than training in technical skills.

6. Increase the amount of technical content in preparing workers for technical occupations.

7. Include guidance and counseling.

8. Plan Vocational-Technical Education Program as open-ended, continuous education with its major responsibility being to develop readiness and capacity for lifetime learning and re-learning of occupational knowledge.

9. Organize for maximum articulation from the secondary level to the community colleges and to four-year institutions.

10. Increase the options available to individuals.

11. Provide basic skills and concepts which apply universally to clusters of occupations.

12. Improve image and prestige through counseling, research, and other techniques.

*A State Master Plan for Vocational Education, February, 1968.

THE INTRODUCTION TO VOCATIONS PROGRAM

PHILOSOPHY OF THE PROGRAM

The ultimate goal of every educational institution should be to provide every child with that education which is best for him as he progresses through life. As such, the Introduction to Vocations Program is designed to provide options which will lead to the maximum self-actualization of each individual. Hence, the basic philosophy of the Introduction to Vocations Program is to provide students with the necessary qualifications for maximum flexibility in their post-high school activities.

DESCRIPTION OF THE PROGRAM

The Introduction to Vocations Program is designed for individuals in high school with different kinds of abilities, interests and aptitudes as opposed to the traditional different levels of abilities. It is basically a systematic and organized program for the exploration of career opportunities in the vocational-technical fields in the present and emerging technological and industrial world, and more especially in Hawaii. This exploration includes knowledge about and actual experiences in families of occupations; teachers with occupational competencies and guidance services are the chief instructional resources. Instructional facilities, equipment, and supplies must be most nearly those of the occupations being explored. Cooperative work experiences in industry in the advanced stages of this exploration are most important.

It is expected that students who enroll in this program have already attained the basic verbal, scientific and mathematical skills to levels required to work with equipment, tools, materials and processes in industry. However, those students who desire to increase their academic competencies further will be encouraged to do so. The occupational aspirations may thus be raised for these students to include those classified as professional and scientific.

The scope of the explorations will be within eight large families of occupations identified through a study of Hawaii's occupational outlook as reflected in community college and other post-secondary courses of study which qualify students and workers for sub-professional level jobs and for advancement commensurate with their ability, education, and experience.

OBJECTIVE OF THE PROGRAM

It is the objective of the Introduction to Vocations Program to develop Hawaii's job interested students who have different kinds of abilities, attitudes, and interests to be knowledgeable about the career opportunities and career demands in the present and future economic and technological culture through a variety of experiences in the various clusters of occupations. They should be able to apply the knowledge and skills acquired to make informed occupational choices when selecting

a post-secondary vocational-technical course of study. As the result of instruction in this program, the individual should be able to:

Comprehend information regarding career opportunities and career demands in the present and future economic and technological culture.

Recognize own aptitudes and interests and make a wise choice in selecting a post-secondary course of study in the vocational-technical field.

Perform entry level tasks within one or more related job families: Business Occupations, Personal/Public Service Occupations, Health Occupations, Food Service Occupations, Electrical/Electronics Occupations, Construction/Civil Technology Occupations, Mechanical Occupations, and Technical Graphics Occupations.

ROLES AND RESPONSIBILITIES OF TEAM MEMBERS OF THE INTRODUCTION TO VOCATIONS PROGRAM

The success of the Introduction to Vocations Program depends on the efforts of all participating members. With clearly defined roles and responsibilities, a meaningful program can be developed at the schools. The roles and responsibilities are outlined into four sections.

I. THE STATE AND DISTRICT STAFFS

II. THE SCHOOL ADMINISTRATOR

III. THE COUNSELOR

IV. THE VOCATIONAL-TECHNICAL INSTRUCTOR

ADMINISTRATIVE AND STAFF FUNCTIONS FOR PROGRAM IMPLEMENTATION

I. State and District Staffs' Roles

The State and District Staffs provide direction and support for the implementation of the program.

The State Vocational-Technical Education Section, in cooperation with the Districts, will provide the following support:

A. Information on Introduction to Vocations Program.

B. Orientation to Introduction to Vocations Program for all department personnel.

C. In-service workshops for participants in Introduction to Vocations Program.

D. Direction and guidance to school administrators and teachers.

E. Consultative service for facilities, equipment, personnel, and instructional program development.

F. Budget development.

G. Monitoring service.

H. Evaluation of program.

II. Administrator's Role

In initiating and developing the Introduction to Vocations Program in any high school, administrative support and guidance are imperative and must be deemed as important factors in the success or failure of the program. Hence, in order to successfully implement the Introduction to Vocations Program, the administrator must consider several important factors such as coordination of the program; the selection and development of special faculty; scheduling; provisions for counseling and guidance services to students and parents; required physical facilities; budgeting; and the use of advisory committees.

In each of the following, the administrator should:

A. Understand, explain, define, and present the rationale of the program.

1. Disseminate information regarding program.

2. Designate program areas in each school.

B. Coordinate Program

1. Select program coordinator from the following:

   a. Vice Principal
   b. Department Head
   c. Counselor
   d. Teachers in the Program

2. Provide time in school for program coordinator and team members to assess, evaluate on-going program.

3. Select and assign personnel to the program.

   a. Vocational-Technical Instructors
   b. Counselors
   c. Program Coordinator

4. Review, define, and assess roles of members of the program.

In each of the following, the administrator should review:

A. School Needs

1. Determine students' occupational interests and abilities.

2. Provide information about occupational opportunities to students.

3. Assess and make available school facilities, equipment, and supplies.

B. Teachers' Schedules

1. Program for flexibility.

2. Include preparation period.

C. Budgetary Needs

1. Consider requests and priority including C.I.P.

2. Select equipment comparable to that used in industry and necessary to meet program objectives -- equipment purchases.

3. Obtain necessary supplies essential to carry out an occupational experience -- supply purchases.

4. Comply with procedures outlined in state guidelines for inventories.

D. Evaluation of Program

1. Evaluate the program continuously.

2. Make formal assessment after the completion of the program each year.

E. Organization of the Advisory Committee

1. Select the committee members by occupational areas involved.

2. Recommend student participation.

3. Orient the committee members to the Introduction to Vocations Program.

4. Delineate clearly the responsibilities of the committee.

III. Counselor's Role

The counselor has a vital role to play in the Introduction to Vocations Program. He has the responsibility of helping the student to assess and reassess the many factors which relate to his vocational goals: (a) his individual growth, development, and plans; (b) his values and attitudes toward work; (c) the economic conditions and opportunities; (d) educational and employment requirements; (e) financial and home factors.

The counselor, in cooperation with the vocational teachers and other staff members, has a key role in identifying the needs of the students and informing the administration of these needs so that appropriate curriculum can be provided. This curriculum should provide a wide exposure to the broad fields of work and enough exploratory experiences to enable the student to narrow choices and be able to select one or several appropriate occupations.

The counselor has the responsibility of making the professional personnel of his school aware of the process in making vocational choices and the need to emphasize the following points: (a) choice making is an on-going, continuous, and dynamic process extending over a period of time; (b) choice making is a process of developing and implementing a self-concept; (c) choice making is influenced by many personal and social factors such as abilities, interests, values, and conditions.

The counselor has the responsibility of helping each vocational student plan a program of studies to prepare himself for appropriate future education and/or employment.

A. Selection and Identification of Students

1. Students are to be admitted into the Introduction to Vocations Program from the general school population.

2. Counselors shall be available to aid in the selection and interpretation of appropriate vocational testing.

3. The counselor, as an Introduction to Vocations team member, may consult with students and teachers.

B. Evaluation

1. The counselor may aid and assist in the on-going evaluation of the Introduction to Vocations Program.

2. The counselor may aid and assist in a follow-up study of graduates.

3. The counselor may provide assistance to the Introduction to Vocations team in observing behavioral changes.

C. Some of the roles and duties of the counselor in the Introduction to Vocations Program are delineated as follows:

1. Develop student profiles -- test scores, interests, strengths, weaknesses, etc. -- for counselor, teacher, and pupil use.

2. Have frequent individual counseling and group guidance sessions.

3. Use various means -- surveys, rap sessions, etc. -- to establish informational needs.

4. Make available to the students information on a wide variety of vocations and occupations.

5. Make available information on community colleges and their courses of study.

6. Make available information on private technical schools and their courses of study.

7. Arrange an appropriate schedule with the vocational education teacher for group and individual student counseling and guidance.

8. Attend Vocational Education Department team meetings as a participating member.

9. Assist the vocational education team in arranging for resource speakers, visitations, field trips, etc.

10. Cooperate with the vocational education team in doing a community survey of occupational needs.

11. Assist the vocational education team in conducting a public relations program.

12. Act as liaison between the school and the industries in the communities in cooperation with the vocational education team.

13. Disseminate pertinent information and materials to the total staff of the school.

IV. Vocational-Technical Instructor's Role

A. Curriculum Planning and Development

1. Prepare individualized units of instruction in behavioral terms.

2. Prepare job task analysis and identify operations for instructional planning.

3. Select and develop occupational and resource materials for instructional units.

4. Prepare test materials for instructional units.

5. Keep records of student's progress (student profile).

6. Recommend new course offerings as community needs and student interest indicate.

7. Identify minimum requirements for entry level attainment.

8. Provide students and counselors with occupational information whenever feasible.

9. Introduce occupational information as part of the course.

B. Management

1. Prepare a budget for the Introduction to Vocations Program including maintenance, equipment, supplies, and instructional materials.

2. Prepare an inventory list of all equipment and update it periodically.

3. Prepare an inventory list of all supplies and update it periodically.

4. Set up control system for laboratory management.

5. Mark federal funded equipment.

6. Provide enrollment and follow up data through Data Collection System.

C. Coordination

1. Recommend membership for the Advisory Committee at the school level including representatives from the following:

   a. Labor Union
   b. Management
   c. Vocational Counselor
   d. Student
   e. Representative from each occupational field

2. Meet and plan regularly with vocational counselors and labor management representative as directed by the administration.

D. Program Evaluation

1. Participate in an evaluation task force.
2. Conduct student follow-up study.
3. Recommend changes in organization for program improvement.

A SAMPLE VOCATIONAL GUIDANCE UNIT

This career guidance unit is a prototype designed to be part of every vocational-technical course. Teachers may use this as a plan of operation, as a source guide, or as a model for developing similar units.

The primary focus of this unit is the introduction of the various occupational opportunities that are available within an occupational cluster. Through this unit, the students should become cognizant of how their experiences in a course are related to job requirements of specific occupations within a cluster.

The objectives of this unit are: (1) To develop understanding and awareness of the many job opportunities in this field of work. (2) To recognize the interrelatedness of job specifications and requirements.

The methods employed to reach these objectives may include slide tape presentations, classroom research, classroom discussions, field trips, resource speakers, and student participation in assigned or chosen projects.

This unit is flexible, and teachers may add or delete assignments or suggestions to coincide with their students' needs and preferences.

PURSUING CAREERS IN ELECTRONICS TECHNOLOGY

Introduction to Careers in Electronics Technology

Electronics Technology represents a large field of work and consequently a wide range of occupations. Many jobs can be related somewhat to the field of Electronics Technology. However, to assess the manpower requirements of specific occupations in this field, limits should be set. Thus, only those occupations that demonstrate a functional relationship to the identification, study, or solution of electronic problems have been included. The subsequent list of occupational descriptions is not intended to be comprehensive for all conceivable occupations.

Estimates and projections of future occupational needs can be useful, but their limitations must be understood. Students must be aware of this fact before selecting courses of study or training geared for particular careers. They must be guided to consider all the factors which have direct bearing on potential employment in any chosen occupation.

Occupational Information (Refer to Occupational Studies Leaflet on page 16 for sample student study form.)

I. Electronics Technology Careers

A. Outlook for Careers in Electronics Technology
B. Job Selection Criteria
C. Personal Requirements

For each occupation identified in the hierarchy of occupations, the following information should be included in the discussions:

1. How and where to apply for jobs
2. Conditions of employment
3. Union obligations
4. Government regulations, etc.

II. Electronics Technology Careers in Science and Research

A. Researchers

1. Communication researcher
2. Electronic component researcher
3. Instrumentation scientist

B. Testers and Analysts

1. Micro circuit tester
2. Satellite system analyst
3. Solid state tester

C. Others

III. Electronics Technology Careers in Education and Technology

A. Educators

1. Vocational teacher (electronics)
2. Professor of Electronics
3. Industrial educator (electronics)

B. Engineers

1. Electronics engineer
2. Instrumentation engineer
3. Audio Engineer

C. Designers and Planners

1. Micro circuit designer
2. Electronics devices designer
3. Electronics circuit planner

D. Managers

1. Electronics service manager
2. Electronics production supervisor

E. Others

IV. Electronics Technology Careers in Technical Implementation

A. Inspectors and Monitors

1. Electronic product evaluation technician
2. Quality control technician
3. Sub assembly inspector

B. Technicians

1. Electronics technician
2. Instrumentation technician
3. Communication technician

C. Manufacturers and Producers

1. Operative technician
2. Electronics assembler
3. Semi-conductor assembler

D. Others

V. Electronics Technology Careers in Application and Operation

A. Salesmen and Servicemen

1. Television repairman
2. Appliance repairman
3. Radio and television salesman
4. Electronics maintenance man

B. Operators

1. Radio dispatcher
2. Radar operator
3. Medical technician

C. Others

Possible Alternative Methodology

1. Individualized Guidance Packets
2. Unit in Vocational Guidance
3. Assignments in Vocational Guidance
4. Scheduled Speakers or Resource
5. Field Trips

OCCUPATIONAL STUDIES LEAFLET

_____
General Occupational Field

Specific Occupation in this field: 1st Choice _____

2nd Choice _____

A. Work Done in the Occupation.

1. Types of work done by a person in this occupation: _____

_____

_____

_____

2. Limitations in this field of work in Hawaii as perhaps compared to the mainland U. S.:

_____

B. Employment Trends.

1. Possible employment opportunities today: _____

_____

2. Possible demand for workers five years from now:

_____

3. Upon what information is above statement made under "B".

a. Statistics: _____

_____

b. What opinions - by whom: _____

_____

4. Related occupations which may offer employment:

_____

C. General Working Conditions in this Occupation.

1. Surroundings - environment: _____

_____

2. Wages or pay: _____

_____

3. Working hours: _____

4. Regularity of Employment: _____

_____

5. Promotion or Advancement: _____

_____

6. Health Hazards and Dangers: _____

_____

7. Employee benefits (such as vacations, leaves, pensions, retirement systems, etc.:

_____

_____

8. Employee organizations. Name unions or professional association:

_____

D.

ADVANTAGES	DISADVANTAGES

E. Requirements for Entrance into the Occupation.

1. Preferred Age: _____
2. General Education:

REQUIRED	PREFERRED

3. School Subjects:

REQUIRED	RECOMMENDED

4. Experience:

REQUIRED	RECOMMENDED

5.

INTEREST FIELDS SIGNIFICANT TO OCCUPATION:	APTITUDES REQUIRED IN THE OCCUPATION:

6.

PERSONALITY TRAITS DESIRABLE:	PHYSICAL REQUIREMENTS

7. Hobbies probably related: _____

_____

8. Required licenses, degrees, certificates: _____

_____

9. Kinds of tests related or required. (Name tests if possible.)

F. Training Opportunities

1. School recommended:

a. Name some college, trade school, business school, technical school:

_____

_____

b. Length of training: _____

_____

c. Cost of training:

Tuition:_____ Books:_____ General Expenses:_____

d. Entrance requirements to the training required or educational institutions, if any:

_____

_____

2. Apprenticeship:

a. Where can such apprenticeship training be gotten in Hawaii or on the mainland.

Firm	Location
_____	_____
_____	_____

b. Length of training involved and requirements to be met: _____

_____

_____

c. Pay schedule: _____

_____

d. Entry jobs: _____

_____

3. On-the-job Training:

a. Where can such on-the-job training be gotten in Hawaii or on the mainland.

Firm	Location
_____	_____
_____	_____
_____	_____

b. Length of such training: _____

c. Nature of the training: _____

_____

d. Types of beginning job and income: _____

_____

e. Promotional succession and income: _____

_____

f. Requirements for promotion: _____

_____

G. Other Desirable Information (such as military experience which may be helpful, social estimate of the work and service value to the community). Note: Where more space is needed for the entry of any item on this schedule, a cross-reference may be made to comments incorporated here or on a separate sheet. The comments should be numbered the same as the items on the schedule for easy identification. Keep extra notes, pictures, or other miscellaneous job information on the inside of this folder.

_____

_____

_____

SAMPLE

OCCUPATIONAL UNITS

OF INSTRUCTION

BUSINESS OCCUPATIONS: OFFICE

General Description:

Office Education is designed for students who are interested in office occupations as a career. The program content is determined by the needs and interests of the students and the requirements of entry-level jobs or post-high school education. Actual work experience under school and employer supervision is provided through the cooperative education plan.

Major Courses:

Introduction to Data Processing
Advanced Typing
Beginning Shorthand
Advanced Shorthand
Beginning Accounting
Advanced Accounting
Business Machines/Office Practice
Cooperative Office Education

Office Education

Objectives of Office Education

As a result of their learning experiences, students will be able to:

- Operate some of the more widely used office machines.
- Follow instructions, and execute tasks efficiently.
- Improve proficiency through application of office education skills to work situation.
- Identify and use some of the more commonly used accounting systems.
- Perform routine clerical tasks such as handling telephone calls, greeting office callers, handling mail and petty cash, and preparing commonly used business forms, payrolls and inventories.
- Demonstrate accuracy, neatness, and thoroughness in meeting the demands of an office.
- Recognize those personal traits and attitudes which are essential for success in the business world.
- Use and care for office supplies, tools, machines, and office equipment.
- Identify and use some of the more commonly used filing systems.
- Identify some procedures of locating, applying, obtaining, and holding a job.
- Identify applications of electronic data processing to the office.

Basic Knowledge and Skills for Office Work

There are three possible options within the office occupations. They are the clerical, stenographic and accounting occupations. The general units of instruction within all of these are those listed below.

Units of Instruction

. The Role of the Office in Business

  Office Organization
  The Office Worker

. Business Forms

. Office Machines

  Adding and Calculating
  Duplicating

. Recordkeeping

. Typewriting

. Human Relations

. Filing

. Communications

  Telephone
  Written and Oral

. Job Orientation

With the learning experiences provided by the units of instruction as outlined above, students will be equipped and have the option to either pursue a post-secondary program for specialization or to enter employment in some of the following occupations:

General Office Clerk
Clerk-Typist
Clerk Stenographer
File Clerk
Bookkeeping Clerk
Mail Clerk
Receptionist
Payroll Clerk
Messenger
Business Machines Operator
Typist
Teller
Timekeeper
Transcribing Machine Operator
Duplicating Machine Operator

Suggested Advisory Committee

Administrator
Subject Teacher
Student Representative
Counselor
Employment Service Representative
Business Representative
Office Worker
Interested Parent

Sample Unit of Instruction: Duplicating Machines

Behavioral Objectives

As a result of their learning experiences, students will be able to:

Clerical Office Work

. Type masters for fluid and stencil duplicating machines.

. Identify and demonstrate the use of the fluid duplicator.

. Identify and demonstrate the use of the stencil duplicator.

. Select the appropriate process and materials needed for reproduction jobs.

. Care and maintain equipment and supplies.

. Operate a dry-copying machine.

Activities

. Type a paragraph on a spirit master and correct errors neatly, using appropriate method.

. Run off the master on a stencil, making corrections as specified.

. Type a letter on a stencil, making corrections as specified.

. Run off the stencil on a stencil duplicator.

. Demonstrate the use of duplicators to another student.

Evaluation for Sample Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

BUSINESS OCCUPATIONS: DISTRIBUTIVE

General Description:

Distributive Education is a program which provides students with the opportunity to explore the field of marketing and distribution, and to build a foundation for continuing education related to distribution. A cooperative effort requiring the joint interest and efforts of the school and the distributive businesses in the community is provided through a cooperative education plan. The classroom instruction is planned around the competencies required in the field of marketing and distribution.

Major Courses:

Introduction to Sales and Marketing
Salesmanship
Business Principles and Management
Business Law
Advertising
Cooperative Distributive Education

Distributive Education

Objectives for Distributive Education

As a result of their learning experiences, students will be able to:

- Enter and advance in distribution and marketing careers.
- Identify work habits and attitudes which are essential to success on the job.
- Assume a sense of responsibility toward the business and the employer.
- Set realistic goals in terms of his interests, abilities, and potentials.
- Apply operational techniques in distribution and marketing.
- Assume socio-economic responsibilities and ethical conduct that accompany the right of the individual to engage in distribution, and to participate in a competitive free enterprise economy.
- Describe the contributions that the field of distribution and marketing makes to the individual and society.
- Identify the relationship between school and vocational objectives.
- Describe the varied career opportunities in distribution.
- Describe the consumer and his role in a viable economy.

Basic Knowledge and Skills for Distributive Work
Units of Instruction

. Channels of Distribution
. Techniques of Selling
. Advertising and Sales Promotion
. Visual Merchandising/Display
. Cashiering
. Use of Telephone
. Using Adding and Calculating Machines
. Human Relations in Business

With the learning experiences provided by the units of instruction as outlined above, students will be equipped and have the option to either pursue a post-secondary program for specialization or to enter employment in some of the following occupations:

Sales Clerk
Advertising Clerk
Cashier
Telephone Operator
Marketing Clerk
Stock Clerk
Courtesy Boy
Warehouseman
Delivery Clerk
Gift Wrapper
Shipping and Receiving Clerk

Suggested Advisory Committee

Administrator
Subject Teacher
Student Representative
Counselor
Business Representative
Distributive Worker
Interested Parent

Sample Unit of Instruction: Cashiering

Behavioral Objectives of Unit

As a result of their learning experiences, students will be able to:

. Greet the customer appropriately, and with a smile.

. Handle merchandise with care.

. Record the sale on the cash register accurately.

. Receive money and give change accurately.

. Place merchandise in packages according to specified practices.

. Select appropriate supplies needed to wrap items according to specified practices.

. Answer inquiries a customer might have, pleasantly and clearly.

Activities for Unit

. Practice the use of the cash register.

. Practice giving change with another student as the customer.

. Wrap different-sized and shaped boxes.

. Demonstrate bagging products of different size, shape, texture, and weight.

. Demonstrate use of the cash register and give correct change.

. Demonstrate packaging items of varied sizes.

. Demonstrate wrapping a package for mailing.

. Demonstrate wrapping a gift package.

. Weigh a package on a postal scale.

. Weigh an item on a produce scale.

Evaluation for Unit

. Instructor observations of student behaviorial changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

BUSINESS OCCUPATIONS: AGRICULTURAL TECHNOLOGY (AGRI-BUSINESS)

General Description:

The Agricultural Technology course of study provides students with the technical knowledge and skills needed to pursue occupations related to plant and animal life for economic and ecologic purposes and other agricultural activities allied with the distribution field. Financial and operational management of agricultural enterprises is emphasized. Innovative and experimental agricultural projects which might result in economically valuable products are encouraged among students. Environmental considerations are subsumed in all aspects of the program. This program also prepares students for post-secondary agricultural programs of their choice. Instruction is individualized whenever feasible and instructional materials are correlated with occupational job tasks.

Major Courses:

Agricultural Technology I
Agricultural Technology II
Cooperative Agricultural Education

Agricultural Technology

Objectives of Agricultural Technology

As a result of their learning experiences, students will be able to:

- Use the skills and knowledge acquired to successfully engage in plant growth and development activities.
- Use the skills and knowledge acquired to successfully engage in animal growth and development activities.
- Apply the agricultural related competencies in processing and distributing agricultural products.
- Apply management principles and practices as they relate to various agricultural enterprises.
- Utilize the knowledge from plant science, animal science, soil science, agricultural mechanics, and agricultural management for the development of new economically valuable agricultural products and services.
- Effect innovations in various agricultural practices.
- Select methods and techniques least detrimental to ecology and the environment in performing various agricultural activities.
- Apply financing principles and practices to agricultural enterprises.

Basic Knowledge and Skills for Agricultural Technology
Units of Instruction

- Plant and Animal Genetics
- Plant Growth and Development
- Animal Growth and Development

. Processing and Distribution of Agricultural Products
. Management in Agricultural Enterprises
. Agricultural Machinery and Equipment
. Ecology and Agriculture
. Research and Experimentation in Agriculture
. Technological Development in Agriculture
. Financing Agricultural Enterprises

With the learning experiences provided by the units of instruction as outlined above, the student will be equipped and have the option to further pursue his interests in post-secondary programs or to enter employment in some of the following occupations:

Farm Hand
Animal Husbandryman
Irrigator
Farm Machine and Equipment Maintenance Man
Farm Equipment Operator
Farm Equipment and Supply Salesman
Agricultural Technician
Farm Supervisor
Farm Manager
Produce Cooperative Manager
Produce Dealer
Packing, Milling and Processing Plant Supervisor or Manager
Rancher
Farmer

Suggested Advisory Committee for Agricultural Technology

Administrator
Subject Teacher
Student Representative
Counselor
Interested Parent
Extension Service Agent
Young Farmer
FFA Chapter President

Sample Unit of Instruction: Animal Growth and Development

Behavioral Objectives of Unit

As a result of their learning experiences, students will be able to:

. Compute the nutritional value of various feeds and develop a ration for a specific class of livestock based upon efficient feeding practices.

. Demonstrate knowledge of animal physiology through application and use of approved practices in handling and caring for animals.

. Identify environmental factors which determine similarities and differences as they apply to a specific class of animals.

. Recognize the symptoms of the most common animal diseases and use control measures to eradicate the cause or causes as they apply to a specific class of animals.

. Control common pests as they apply to a specific class of animals.

Activities of Unit

. Carry out experiments to show the effects of balanced and non-balanced rations using small animals.

. Raise a set of broilers on wire floor and another on litter to compare growth and development.

. Administer preventive as well as curative antibiotics to a specific class of animals.

. Design a program to promote good health and safety of farm animals.

. Identify and treat animals for internal as well as external parasites and pests.

. Plan and carry out an animal project individually or as a group.

Evaluation of Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written and oral examinations.

BUSINESS OCCUPATIONS: ORNAMENTAL HORTICULTURE (AGRI-BUSINESS)

General Description:

This occupational area is designed to offer students the opportunity to acquire knowledge and skills in the field of Ornamental Horticulture to enable them to be employed in agri-business and related service occupations. This program will also prepare students to pursue their interests in post-secondary programs if they so desire. Instruction is individualized and instructional materials are correlated with occupational job tasks.

Major Courses:

Ornamental Horticulture I
Ornamental Horticulture II
Cooperative Agricultural Education

Ornamental Horticulture

Objectives of Ornamental Horticulture

As a result of their learning experiences, students will be able to:

- Use horticultural competencies to propagate, nurture, process, and market plants for ornamental purposes.
- Apply conceptual knowledge in turf management, plant nursery management, floriculture, floristry, landscape gardening, and other activities related to plant and floral production, processing, distribution and marketing.
- Use, care for and repair horticultural tools and equipment safely.
- Explain use and characteristics of chemical products used in horticulture.
- Construct and use efficient and effective plant growing structures such as green houses, mist boxes, benches and plant boxes.
- Establish and maintain a lawn or turf.
- Develop a landscape plan for a typical single dwelling or an urban center development.

Basic Knowledge and Skills for Ornamental Horticulture
Units of Instruction

- Plant propagation
- Plant growth and development
- Horticultural tools and equipment
- Plant growing structures
- Processing, marketing and distribution of horticultural products
- Chemical products and ornamental horticulture
- Turf management
- Landscape planning and design
- Technological developments in horticulture
- Management practices in ornamental horticulture enterprises

With the learning experiences provided by the units of instruction as outlined on the previous page, students will be equipped and have the option to either pursue a post-secondary program for specialization or enter employment in some of the following occupations:

Groundskeeper
Nurseryman
Landscape Gardener
Cut Flower Grower
Horticulture Supplies Salesman
Florist
Horticulturist
Landscape Designer

Suggested Advisory Committee for Ornamental Horticulture

Administrator
Subject Teacher
Student Representative
Counselor
Industry Representative
Ornamental Horticulture Worker
Interested Parent
Extension Service Agent
Young Farmer
Future Farmers of America Chapter President

Sample Unit of Instruction: Plant Propagation

Behavioral Objectives of Unit

As a result of their learning experiences, students will be able to:

. Select the most practical method of propagation for specific species of plant.

. Germinate different plant seeds.

. Propagate plants by cutting, layering, grafting, and budding.

Activities of Unit

. Compare reproductive characteristics of different species of plants.
. Conduct seed germination experiment under varying environmental conditions.
. Propagate plants by various types of cuttings.
. Experiment with root inducing hormones.
. Graft and bud ornamental plants.
. Air layer various ornamental plants.
. Demonstrate plant tissue culture.

Evaluation of Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

PERSONAL/PUBLIC SERVICE OCCUPATIONS: PERSONAL SERVICE

General Description:

This is an instructional program to prepare students for employment in personal service occupations. It provides basic knowledge and competencies for Hotel, Motel Housekeeping or Child Care Services. It also gives students exploratory experiences to enable them to pursue further education and training within these occupational areas if they so desire.

Major Courses:

Option I
Hotel & Motel Housekeeping

Option II
Child Care Services

Child Care Services

Objectives for Child Care Services

As a result of their learning experiences, students will be able to:

- Recognize that child care and guidance are important to child growth and development.
- Recognize and provide for the basic physical, social, emotional, and intellectual needs of children.
- Cope with child behavior arising from various emotions.
- Utilize techniques which encourage children's participation in free play.
- Practice good habits of health and safety.
- Identify and provide for the nutritional needs of children.
- Keep equipment and supplies clean and orderly.
- Have skills in the area of child care.
- Explore and be knowledgeable about wage-earning opportunities in child care and apply for employment.

Basic Knowledge and Skills for Child Care Services
Units of Instruction

- Job orientation in child care services

  Nature of employment in child care and guidance
  The successful employee

. Physical needs of children

Physical growth and development of the child
Physical care of young children

. Guidance of children

Social and emotional development
Psychological development
Guidance practices of young children

. Child play and learning

Intellectual development of the young child
Creative activities through music, art, literature and science

. Health and safety of children

Safety of children
Health of children

. Nutritional needs of children

Nutritious meals for children
Development of good eating habits

. Appropriate environmental conditions for children

Physical climate of the child care facility
Maintenance and care of equipment and supplies for children

With the learning experiences provided by the units of instruction as outlined above, students will be equipped and will have the option to further pursue their interests in post-secondary programs or to enter employment in some of the following occupations:

Baby sitter
Nursery school worker
Assistant supervisor of day care center
Nursery school teacher
Nursery school administrator

Suggested Advisory Committee for Child Care Services

Administrator
Subject Teacher
Student Representative
Counselor
Health and welfare agency representative
Public and private nursery school representative
Child care service worker
Interested parent

Sample Unit of Instruction: Creative Activities Through Literature

Behavioral Objectives

As a result of their learning experiences, students will be able to:

Child Care Service

. Develop and list criteria for the selection of books and stories for young children.

. Select appropriate story book for a preschooler (3-4 years old).

. Read a story to a child.

. Use flannel board for story telling.

FOOD SERVICE OCCUPATIONS: FOOD SERVICE

General Description:

This is an instructional program to orient students to the hospitality and food service industry. It provides basic knowledge and competencies fundamental to the food service occupations to enable individuals to further pursue their education and training in food service at the post-secondary level or to enter employment in a food service occupation.

Major Courses:

Food Service I (Nutrition/Basic Food Preparation)

Food Service II (Food Management; Food Preparation and Service; including Cooperative Work Experience)

Food Service

Objectives for Food Service

As a result of their learning experiences, students will be able to:

- Appreciate the size, diversity and trends of the food service industry.
- Recognize the unlimited career opportunities in the food service industry.
- Demonstrate personal qualities essential for job success.
- Understand the legal aspects of employment.
- Apply the principles and skills of commercial food preparation.
- Apply the basic principles of safety and sanitation in food service operation.
- Demonstrate acceptable attitudes and techniques of dining service procedures.
- Produce meals for a variety of clientele.
- Receive and store food and supplies using food industry procedures.

Basic Knowledge and Skills for Food Service
Units of Instruction

- Orientation to the Food Service Industry.

  Food Service establishments
  Career opportunities in food service
  Essential personal qualities
  Labor laws and employment policies

. Fundamentals of Food Preparation Skills

Techniques of food preparation
Essential work habits in food services

. Fundamentals of Dining Service and Meal Management

Techniques of dining service
Menu and production planning

. Receiving and Storing Food and Supplies

Facilities for food storage
Procedures for receiving and storing food and supplies

With the learning experiences provided by the units of instruction as outlined above, students will be equipped and have the option to pursue further training and education or to seek employment at the entry level in some of the following occupations:

Bakers
Bus boys
Cafeteria managers
Car hops
Caterers
Chefs
Cooks
Cooks' helpers
Counter supervisors
Dietary supervisors
Dining room managers
Hostesses and stewards
Kitchen helpers
Kitchen supervisors
Pantry workers
Store room clerks

Suggested Advisory Committee for Food Service

Administrator
Subject Teacher
Student Representative
Counselor
Union Representative
Industry Representative
Food Service Worker
Interested Parent

Sample Unit of Instruction: Essential Work Habits in Food Services

Behavioral Objectives of Unit

As a result of their learning experiences, students will be able to:

. Demonstrate sanitary practices in food service activities.

Activities for Unit

Food Service

. Demonstrate proper housekeeping procedures and clean work habits in foods laboratory.

. Display cleanliness rules used by restaurants.

. Take field trip to local food establishment to observe and become familiar with housekeeping procedures.

Evaluation for Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

CONSTRUCTION/CIVIL TECHNOLOGY OCCUPATIONS: BUILDING CONSTRUCTION

General Description:

The program of study in this occupational area is designed to provide students with basic experiences in the building construction industry that will equip them for further study in post-secondary programs as well as prepare them for entry level jobs. Instruction is focused on job tasks that are necessary for employment in the field. Individualized work in problem solving activities associated with the construction industry is characteristic of the type of training the students receive.

Major Courses:

Technical Sketching and Interpretation
Building Construction Technology I
Building Construction Technology II (includes Cooperative Work Experiences)

Building Construction

Objectives of Building Construction

As a result of their learning experiences, students will be able to:

. Identify the various occupations within the building construction industry.

. Lay out a site, set foundations, construct floor and wall framing, apply finish, and do other job tasks associated with building construction work.

. Use, care for, and properly handle basic hand tools and equipment.

. Identify, select, and estimate the cost of building materials for a selected job.

. Find, interpret, and apply technical and scientific information that deals with the building construction industry.

. Read and follow building construction blueprints.

. Plan projects to meet building code specifications.

Basic Knowledge and Skills for the Building Construction Industry
Units of Instruction

. Course Orientation -- Laboratory Organization and Management
. Job Orientation in the Field of Construction
. Construction Safety
. Hand and Power Tools
. Orthographic Projection Drawing (Blueprint Reading)
. Construction Materials and Cost Estimation
. Surveying and Laying Out Site
. Seating Foundations
. Framing
. Wall Framing
. Roof Framing and Roofing
. Exterior Wall Covering

. Electrical Wiring
. Plumbing
. Applying Interior Wall Siding
. Installing Ceiling
. Constructing Concrete Slab for Stairway
. Constructing Stairway and Railing
. Applying Interior and Exterior Finishes
. Applying Floor Covering

With the learning experiences provided by the units of instruction as outlined above, students will be equipped and have the option to further their education and training in post-secondary programs or to enter employment in some of the following occupations:*

General Construction Worker (Apprentice)
Carpenter (Apprentice)
Cement Mason (Apprentice)
Floor Tile Layer (Apprentice)
Glazier (Apprentice)
Tile Setter (Apprentice)
Electrician (Apprentice)
Plumber (Apprentice)
Roofer (Apprentice)
Painter (Apprentice)
Plasterer (Apprentice)

Suggested Advisory Committee for Building Construction

Administrator
Subject Teacher
Student Representative
Counselor
Union Representative
Industry Representative
Building Construction Worker
Interested Parent
Employment Service Representative

Sample Unit of Instruction: Exterior Wall Covering

Behavioral Objectives of Unit

As a result of their learning experiences, students will be able to:

Building Construction

. Place and tack a wall siding in position.
. Measure, cut, and install soffit, fascia, and rake.
. Completely nail the wall covering to an existing wall frame.
. Complete the job according to blueprint.

*In the apprenticeable trades, entry level will be as an apprentice.

Activities of Unit

. Read job specifications and blueprint of project, using glossary of terms and symbols as reference.

. Study building codes and regulations which apply to the tasks to be performed.

. Measure, cut, and install a corner board according to plans.

. Measure, cut, and install vertical siding on the side wall of the structure according to plans.

. Install soffit, fascia, and rake.

. Bend and install flashing over window.

. Correctly apply the clapboard siding over sheathing.

. Prepare a bill of material for the task.

. Estimate the cost for the job.

Evaluation of Sample Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

ELECTRICAL/ELECTRONICS OCCUPATIONS: ELECTRICAL

General Description:

This occupational area provides experiences which enable students to become familiar with the job tasks that are related to the electrical industries. The program is not aimed at an in-depth development of skills in any one occupation, but is structured to prepare students with the basic skills necessary to enter a number of occupations within the electrical cluster. The instructional plans include various teaching methods and individualized activities which facilitate the structuring of the learning situation as required. Students will be introduced to technical and related content through several methods closely resembling the industrial structure.

Major Courses:

Technical Sketching and Interpretation
Electrical Technology I
Electrical Technology II (includes Cooperative Work Experiences)

Electrical Technology

Objectives of Electrical Technology

As a result of their learning experiences, students will be able to:

. Plan, lay out, install and repair wiring, electrical fixtures, apparatus and control equipment.

. Read and interpret blueprints of electrical wiring and equipment.

. Measure, cut, bend, thread, assemble, and install electrical conduit.

. Pull wiring through conduit.

. Splice wire correctly.

. Connect wiring to lighting fixtures and power equipment.

. Install control and distribution devices such as switches, relays and circuit breakers.

. Test continuity of circuits using standard testing instruments.

. Repair faulty equipment.

. Comply with local electrical codes.

Basic Knowledge and Skills for the Electrical Industry
Units of Instruction

. Orientation
. Job Orientation in the Field of Electrical Occupations
. Electrical Safety
. Electrical Codes
. Electrical Theory

. Electrical Circuits and Laws
. Magnetism
. Electrical Phase Systems
. Instrumentation and Measurements
. Transformers
. Electrical Motors
. Conductors and Raceways
. Branch Circuits and Feeders
. Illumination

With the learning experiences provided by the units of instruction as outlined above, students will be equipped and have the option to further their education and training in post-secondary programs or to enter employment in some of the following occupations:*

Electrician (Apprentice)
Electrical Repairman's Helper (or Apprentice)
Lineman (Apprentice)
Cable Splicer
Electric Motor Repairman's Helper
Electrical Appliance Repairman's Helper
Electrical Sales and Service Technician
Transformer Repairman

Suggested Advisory Committee for Electrical Technology

Administrator
Subject Teacher
Student Representative
Counselor
Union Representative
Industry Representative
Electrical Worker
Interested Parent

Sample Unit of Instruction: Electrical Motors

Behavioral Objectives of Unit

As a result of their learning experiences, students will be able to:

. Explain and apply direct current motor principles.
. Describe and identify shunt motor characteristics.
. Describe and identify compound motor characteristics.
. Describe and identify series motor characteristics.
. Explain and apply three-phase induction motor principles.
. Describe and identify squirrel cage induction motor characteristics.
. Describe and identify synchronous motor characteristics.
. Describe and demonstrate operation of single phase motors.

*In the apprenticeable trades, entry level will be as an apprentice.

Activities of Unit

. Build a simple motor.
. Visit a motor winding plant.
. Assemble and disassemble different motors.
. Wire a motor for operation.
. Calculate problems related to motors.
. Conduct experiments involving motors.
. View films and filmstrips on motors.

Evaluation of Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

ELECTRICAL/ELECTRONICS OCCUPATIONS: ELECTRONICS

General Description:

This occupational area provides experiences which enable students to become familiar with the job tasks that are related to the electronics industries. The program is not aimed at an in-depth development of skills in any one occupation, but is structured to prepare students with the basic skills necessary to enter a number of occupations within the electronics cluster. The instructional plans include provisions for utilizing various teaching methods and individualized activities which facilitate the structuring of the learning situation as required. Students will be introduced to technical and related content through several methods closely resembling the industrial structure.

Major Courses:

Technical Sketching and Interpretation
Electronics Technology I
Electronics Technology II (includes Cooperative Work Experiences)

Electronics Technology

Objectives of Electronics Technology

As a result of their learning experiences, students will be able to:

- Identify the various occupations within the electronics industry.
- Identify and use the tools and equipment used in the field of electronics.
- Explain the electron theory.
- Calculate problems in electronics circuitry.
- Solder and de-solder components.
- Interpret and read schematic diagrams.
- Use test instruments correctly.
- Describe the basic principles of rectification, amplification, reproduction, oscillation, and transmissions.
- Construct and analyze basic circuits.
- Repair and align various electronic devices.

Basic Knowledge and Skills for Electronics Occupations
Units of Instruction

- Orientation
- Safety Rules and Regulations
- Tools and Machines

. Instrumentation and Measurement
. Basic Electronics Theory and Communication
. Electronic Circuitry and Network Laws
. D. C. Circuits and Applications
. A. C. Circuits and Applications
. Tubes and Semi-Conductors
. Electronic Transmission and Receiving Circuitry and Devices
. Radio and Television Repairs

With the learning experiences provided by the units of instruction as outlined above, students will be equipped and have the option to pursue further education and training in post-secondary programs or to enter employment in some of the following occupations:*

Electronic Technician's Helper (or Apprentice)
Radio and Television Repairman's Helper
Electronic Component Assembler
Electronic Sales and Service Technician
Telephone Installer
Control Room Technician
Radar Technician
Protective Signal Repairman
Sound Technician

Suggested Advisory Committee for Electronics Technology

Administrator
Subject Teacher
Student Representative
Counselor
Union Representative
Business Representative
Interested Parent
Registrar
Electronics Worker

Sample Unit of Instruction: Tubes and Semi-Conductors--Vacuum Tubes

Behavioral Objectives

As a result of their learning experiences, students will be able to:

Electronics Technology

. Describe the diode tube and name some of its uses.
. Construct a power supply circuit.
. Describe a triode and name some of its uses.
. Explain Amplification Factor.
. Explain plate resistance, transconductance, and interelectrode capacitance.
. Describe the tetrode and name some of its uses.
. Construct various circuits to illustrate vacuum tube bias.
. Describe the pentode and name some of its uses.
. List the classes of vacuum amplifiers.

*In the apprenticeable trades, entry level will be as an apprentice.

Activities

. Perform experiments with diodes and triodes.
. Construct a power supply.
. Perform experiments with tetrodes.
. Measure voltage gains and plate resistance.
. Demonstrate grid bias.
. Calculate amplification gains.
. Construct a simple amplifier.
. Identify the elements within a pentode.
. Test and analyze various kinds of tubes.

Evaluation for Sample Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

MECHANICAL OCCUPATIONS: POWER AND MECHANICS

General Description:

This occupational area offers students occupational experiences which are preparatory to further study and investigation in related post-secondary programs, or as job entry training for those desirous of seeking employment in the automotive and power mechanics industry. The theoretical and practical background necessary to service, repair, and adjust automobiles and other power machine components are provided in classroom and shop activities. Individualized instruction is generally the mode, and the job tasks performed are related to basic occupational skills.

Major Courses:

Technical Sketching and Interpretation
Power and Automotive Technology I
Power and Automotive Technology II (includes Cooperative Work Experiences)

Power and Mechanics

Objectives of Power and Mechanics

As a result of their learning experiences, students will be able to:

- Identify the various occupations within the power and automotive industry.
- Repair, replace and adjust the components of an automobile and other types of power engines.
- Use various electronic testing devices necessary to make repairs and adjustments on the automobile and other power engines.
- Use various hand tools and power equipment necessary to repair and adjust the components of an automobile and other power engines.
- Analyze and repair mechanical and electrical problems in automobile and other power engines.
- Find, interpret, and apply technical information necessary to repair automobiles and other power engines.
- Perform necessary maintenance and service on the various components of the automobile and other power engines.
- Identify materials, tools, equipment, and processes used by the automotive industry.

Basic Knowledge and Skills for Power/Auto Mechanics
Units of Instruction

- Automobile and Shop Safety
- Automobile and Power Motors
- Fuel System
- Lubrication System
- Cooling System

. Exhaust System
. Electrical System
. Ignition System
. Suspension System
. Brake System
. Transmission
. Tune-Up and Troubleshooting
. Body and Fender Repair
. Automobile Painting
. General Care and Maintenance

With the learning experiences provided by the units of instruction as outlined above, students will be equipped and have the option to pursue further training and education in post-secondary programs or to enter employment in some of the following occupations:*

Automotive Mechanics

Automobile Mechanic or Helper
Service Station Attendant
Automobile Tester and Troubleshooter or Helper
Automobile Body and Fender Repairman or Helper
Automobile Painter or Helper
Tire Recapper
Wheel Alignment Mechanic or Helper
Automatic Transmission Mechanic or Helper

Power Mechanics

Small Motor Mechanic or Helper
Motorcycle Mechanic or Helper
Marine Motor Mechanic or Helper
Aircraft Mechanic or Helper
Auxiliary Motor Mechanic or Helper
General Mechanic or Helper
Mechanical Maintenance Man

Suggested Advisory Committee for Power and Mechanics

Administrator
Subject Teacher
Student Representative
Counselor
Union Representative
Business Representative
Tradesman
Interested Parent

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*In the apprenticeable trades, entry level will be as an apprentice.

Sample Unit of Instruction: Brake System--Removal and Inspection of Brake Drum Assembly

Behavioral Objectives of Unit

As a result of their learning experiences, students will be able to:

Power/Auto Mechanics

. Remove and inspect the brake drum assembly as specified by the automobile manufacturer.

. Replace the brake drum assembly.

. Seek information in various resource books on the brake drum assembly.

Activities of Unit

. Select tools and equipment for the job.
. Jack and support the automobile.
. Remove brake drum assembly as illustrated in automobile repair manual.
. Perform visual inspection of complete brake drum assembly.
. Note or replace all defective parts.
. Reassemble brake drum assembly as illustrated in automobile repair manual.
. Lower car and remove jack and safety stands.

Evaluation of Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written and oral examinations.

MECHANICAL OCCUPATIONS: METAL PROCESSING AND FABRICATION

General Description:

This cluster offers students the opportunity to extend their knowledge and skills in metal processing and fabrication. Individual instruction and problem solving activities in the areas of sheetmetal, heat treating, welding and machining will be characteristic of the type of experiences the students will have in this program.

Major Courses:

Technical Sketching and Interpretation
Metals Technology I
Metals Technology II (includes Cooperative Work Experiences)

Metal Processing and Fabrication

Objectives of Metal Processing and Fabrication

As a result of their learning experiences, students will be able to:

- Identify the various occupations within the metal processing and fabricating industry.
- Identify materials, tools, equipment, and processes used by the metal fabricating industries.
- Find, interpret, and apply technical and scientific information necessary for work in the metal fabrication industries.
- Use various hand tools, machines, and power equipment associated with the metal fabrication industries.
- Lay out and develop patterns and templates.
- Read and interpret blueprints.
- Perform necessary job task in the various occupational areas of the metal fabrication industries.

Basic Knowledge and Skills for Metal Processing and Fabrication
Units of Instruction

- Orientation
- Safety Rules and Hazards
- Types of Metals and Materials
- Hand and Power Tools (welding, sheetmetal, and machine shop)
- Types of Machines (welding, sheetmetal, and machine shop)
- Blueprint Reading
- Measuring and Laying Out Material
- Forming, Shaping, and Fabricating Sheetmetal
- Heat Treating Techniques
- Machine Shop Operations and Techniques
- Selection of Rod and Material
- Gas and Arc Welding Techniques
- Technical Related Information

With the learning experiences provided by the units of instruction as outlined on the previous page, students will be equipped and have the option to pursue further education and training in post-secondary programs or to enter employment in some of the following occupations:*

Sheetmetal Helper (or Apprentice)
Machinist (Apprentice)
Gas Welder (Apprentice)
Arc Welder (Apprentice)
Foundry Coremakers Helper
Foundry Molders Helper
Structural Reinforcing Iron Worker (Apprentice)
Metal Patternmakers Helper
Tool Machine Shop Operators Helper
Tool and Die Maker (Apprentice)

Suggested Advisory Committee for Metal Processing Fabrication

Administrator
Subject Teacher
Student Representative
Counselor
Union Representative
Business Representative
Tradesman
Interested Parent
Apprentice

Sample Unit of Instruction: Arc Welding

Behavioral Objectives of Unit

As a result of their learning experiences, students will be able to:

Arc Welding

. Properly connect the welding leads to the arc welding machine.
. Select the proper arc welding rod for the job.
. Set an arc welding machine to the desired heat range for welding.
. Properly strike an arc.
. Weld at least five different kinds of beads.

*In the apprenticeable trades, entry level will be as an apprentice.

Activities for Unit

. Care and use of arc welder
. Measurement and layout
. Grinding and cleaning
. Machine setting and adjustment
. Welding techniques
. Problem solving
. Welding basic bead patterns
. Testing of weldment

Evaluation of Sample Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

TECHNICAL GRAPHICS OCCUPATIONS: TECHNICAL GRAPHICS

General Description:

This occupational area offers the students the opportunity to develop job skills in the area of Graphic Arts or Drafting. Experiences in the use of tools, equipment, and processes are pursued in depth. Students are also required to do independent work in relation to the occupational job tasks. Precise and high caliber work is demanded throughout the program.

Major Courses:

Option I

Graphic Arts Technology I
Graphic Arts Technology II (includes Cooperative Work Experiences)

Option II

Drafting Technology I
Drafting Technology II (includes Cooperative Work Experiences).

Graphic Arts Technology

Objectives of Graphic Arts Technology

As a result of their learning experiences, students will be able to:

. Perform necessary job tasks associated with the graphic arts industries.

. Identify materials, tools, equipment, and processes used in graphic arts work.

. Find, interpret, and apply technical and scientific information dealing with the graphic arts industries.

. Set up printing presses and layout work to be printed.

. Use of various graphic arts hardware necessary for composing of printed material.

Basic Knowledge and Skills for Graphic Arts Technology
Units of Instruction

. Small Offset Press Operations
. Large Offset Press Operations
. 2 and 4 Color Offset Press Operations
. Quality Control
. Paper, and Its Uses
. Safety Rules and Regulations

With the learning experiences provided by the units of instruction as outlined on the previous page, students will be equipped and have the option to further their education and training in post-secondary programs or to enter employment in some of the following occupations:*

Lithographic pressman or helper
Relief printer or helper
Intaglio printer or helper
Stencil printer or helper
Photographer or helper
Bookbinder or helper

Suggested Advisory Committee for Graphic Arts Technology

Administrator
Subject Teacher
Student Representative
Counselor
Union Representative
Former Student Employed by Industry
Tradesman
Printing Industry Representative
Interested Parent

Sample Unit of Instruction: Small Press Operations

Behavioral Objectives

As a result of their learning experiences, the students will be able to:

Graphic Arts

. Prepare a press for offset book paper.
. Prepare the press for a coated cover paper.
. Adjust and describe the maintenance of the offset blanket.
. Produce a heavy solid.
. Produce a fine line job.
. Select correct inks, driers and varnishes.
. Set paper for registration.
. Adjust ink and dampening rollers.
. Demonstrate paper preparation for press run.
. Adjust blanket and impression pressure.
. Identify lubrication points.
. Adjust feeder and blowers.
. Mix fountain solution.

*In the apprenticeable trades, entry level will be as an apprentice.

Activities

. Print school programs.
. Run school forms.
. Visit a commercial Lithographic Plant.
. Print school publications.
. Print posters and brochures.

Evaluation of Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

Drafting Technology

Objectives of Drafting Technology

As a result of their learning experiences, the students will be able to:

. Identify the various occupations within the Drafting field.

. Read and interpret sketches and blueprints.

. Identify and use the materials, tools, equipment, and processes used in drafting occupations.

. Perform necessary job tasks associated with the drafting occupations.

. Use the various reproducing machines.

. Interpret the various building and zoning codes.

Basic Knowledge and Skills for Drafting Occupations
Units of Instruction

. Orientation to Drafting Room Procedures
. Drafting Tools, Equipment, and Supplies
. Basic Drafting Techniques
. Sketching Techniques
. Orthographic Projection Techniques
. Pictorial Drawing Techniques
. Development Techniques
. Architectual Drawing Techniques
. Building and Zoning Codes
. Reproduction Techniques

With the learning experiences provided by the units of instruction as outlined above, the students will be equipped and have an option to pursue further education and training in post-secondary programs or to enter employment in some of the following occupations:*

Draftsman (or Apprentice)
Draftsman, Detail
Draftsman (electrical, mechanical, architectual, etc.)
Detailer
Layout Man and Checker
Die Designer

Suggested Advisory Committee for Drafting Technology

Administrator
Subject Teacher
Student Representative
Counselor
Union Representative
Industry Representative
Draftsman
Interested Parent

Sample Unit of Instruction: Basic Drafting Techniques

Behavioral Objectives of Unit

As a result of their learning experiences, students will be able to:

Drafting

. Fasten a sheet to the drawing board correctly.
. Select the correct pencil for different tasks.
. Sharpen the pencil correctly.
. Measure and draw horizontal lines correctly.
. Measure and draw vertical lines correctly.
. Measure and draw inclined lines correctly.
. Draw circles and arcs, using various instruments.
. Draw irregular curves.
. Know the alphabet of lines.
. Draw sheet margins, title blocks, and title strip correctly.

*In the apprenticeable trades, entry level will be as an apprentice.

Activities of Unit

. Fasten and square a sheet on the drawing board.
. Select the proper drawing tools and equipment.
. Draw horizontal lines using the "T" square.
. Draw vertical lines using the "T" square, 30°-60° triangles.
. Draw inclined lines using the 30°-60° triangles.
. Draw arcs and circles with the dividers.
. Draw irregular curves using the french curves.
. Lay out a sheet with title block, margin, and title strip.

Evaluation of Unit

. Instructor observations of student behavioral changes as stated in sample unit objectives.

. Student performance of activities completed.

. Written examinations.

APPENDIX SECTION

EXHIBIT A

SAMPLE SCHOOL PLANS OF ACTION

FOR IMPLEMENTING

THE INTRODUCTION TO VOCATIONS PROGRAM

BALDWIN HIGH SCHOOL

OPERATIONAL SCHEME FOR THE INTRODUCTION TO VOCATIONS PROGRAM (1970-1971)

Introduction

The involvement of Baldwin High School in the Introduction to Vocations Program Element of the Preparatory Vocational-Technical Subprogram is enthusiastically regarded by the school administration and participating staff members as an integral component of the total school effort to upgrade the instructional program. Despite the initial limitations within which the program is scheduled to be implemented, our commitment to and endorsement of the rationale of the program element portends the development of a more realistic and relevant instructional program for a broad segment of our student population.

We are confident that the present limitations will not keep us from achieving the initial objectives that we set up for ourselves. Our recognition of these limitations will necessitate the establishment of realistic and attainable objectives on which more sophisticated aspirations might be built for ensuing years.

Among the major limitations we recognize at this point are the following:

1. The absence of valuable lead time between the decision to participate and the date of implementation.

2. The utilization of a substandard physical facility to house the program.

3. The lack of appropriate equipment.

4. A pupil-counselor ratio of 1 to 550.

At this point we do recognize ways in which the above limitations might be coped with to delimit their effect on the effectiveness of the program.

The active participation of five staff members, the principal, and the district curriculum specialist in the orientation workshop has provided us with some background to build upon. The development of this operational plan at this work session has broadened our understanding of what it is we are focusing on.

A new facility is scheduled to be available for use by September, 1972. In the meantime, the allocation of $10,000.00 for renovations should serve to make our present facility more appropriate.

The allocation of $8,000.00 for equipment will be of tremendous help although we see the need for continued support if our equipment inventory is to be upgraded to replicate that of industry.

Finally, we anticipate the reorganization of our counseling program in such a manner as to make the needed thrust in helping our students become more knowledgeable about career opportunities.

The following delineation of responsibilities and the accompanying time table are intended to provide the necessary direction in this year's operations. Because they are not intended to serve as guidelines, they are not to be regarded as rigid agreements; rather, they should serve to help the participating staff members to be informed of their roles as well as responsibilities.

Administrator's Roles and Responsibilities

Activity	Primary Responsibility	Participating Responsibility	Target Date
Identification of occupational areas 1. Agricultural Technology 2. Power and Automotive Technology* 3. Office Education 4. Distributive Education 5. Ornamental Horticulture	X		Aug. 15
Selection of personnel for program	X		Aug. 15
Development of school operational scheme		X	Aug. 20
Selection of program coordinator	X		
Agreement on role and responsibility		X	Aug. 27
Agreement on teaching schedules		X	Aug. 28
Total staff orientation	X		Sept. 1
Student orientation	X		Sept. 2
Schedule changes for additional student enrollees		X	Sept. 2-10
Development of plans for community orientation	X		Sept. 15
Development of expenditure plan		X	Sept. 15
Development of plans for facility renovation		X	Sept. 30
Establishment of advisory committee	X		
Initiate community orientation	X		Sept. 30
Development of plans for evaluation	X		Sept. 30
Initiate evaluation process	X		Oct. 15
Initiate planning for 1971-72	X		Oct. 30
Continue evaluation			On-going

*New Program

Counselor's Roles and Responsibilities

Using the report "Roles and Responsibilities of the Counselor", the counselor in coordination with the other team members will discuss, develop, and set priorities and a time schedule for the counselor's specific functions in the program.

Instructor's Roles and Responsibilities

Activity	Primary Responsibility	Participating Responsibility	Target Date
Curriculum Planning:			
1. Perform job task analysis and identify operations	X		Sept. 30
a. Select and develop materials	X		Immediately & Continuous
b. Prepare test materials	X		"
c. Keep record of student progress	X		"
2. Receive information on minimum requirement for entry level attainment from coordinator	X		Jan. 30
3. Prepare and collect individualized units of instruction	X		Continuous
4. Recommend new course offerings		X	Jan. 30
Management:			
1. Set up control system	X		Sept. 2
2. Prepare budget		X	Feb. 15
3. Prepare and update inventory of equipment	X		June 10
4. Prepare and update inventory of supplies	X		Continuous
5. Mark federally funded program			As Necessary
Coordination:			
1. Recommend membership for advisory committee	X		Sept. 15
2. Meet with counselor and consultants			As Necessary
Program Evaluation:			
1. Participate in evaluating task force		X	Continuous
2. Initiate student follow-up		X	May 1
3. Recommend organizational pattern		X	Dec. 15

RADFORD HIGH SCHOOL

PLAN OF ACTION FOR INTRODUCTION TO VOCATIONS PROGRAM (1970-1971)

A. Programs Offered in 1970-1971

1. Cooperative Industrial Education Program*
2. Office Occupations

B. Personnel for CIEP

1. Administrator
2. Teacher-Coordinator
3. Counselor (Senior)

C. Budget from Program Allotment

1. Equipment
2. Supplies

D. Student Selection

1. Senior students on half-day schedule
2. Students must have transportation
3. Student interest

E. Evaluation of Students

1. Employer
2. Teacher-Coordinator
3. Follow-up survey when possible

F. Time Line on Activities

1. Student selection

   a. 1st -- End of May
   b. 2nd -- Senior registration day -- August 25, 1970

2. Budget completed by July, 1970
3. Testing completed by August 25, 1970
4. Coordinator's selection completed by September 1, 1970
5. Class schedule completed by September 1, 1970
6. Textbook and reference books and materials ordered by August, 1970
7. Equipment ordered by August, 1970
8. Supplies ordered in

   a. 1/2 of allotment -- 1st quarter
   b. 1/4 of allotment -- 2nd quarter
   c. 1/8 of allotment -- 3rd quarter
   d. 1/8 of allotment -- 4th quarter

9. Job placement

   a. 1st completed by end of September, 1970
   b. 2nd continuous throughout the year

10. Evaluation of program -- completed beyond end of school year

*New Program

McKINLEY HIGH SCHOOL

PLAN OF ACTION FOR INTRODUCTION TO VOCATIONS PROGRAM (1970-1971)

A. Programs Offered in 1970-1971

1. Power and Automotive Technology*
2. Technical Graphics Occupations*
3. Construction/Civil Technology Occupations*
4. Cooperative Distributive Education*
5. Cooperative Office Education*
6. Office Occupations

B. Program Administration

1. Principal -- administrator of program

2. Program Coordinator -- Counselor-Coordinator of Federal programs at McKinley High School - Mr. Hiroshi Ige

C. Program Personnel

1. Power and Automotive Instructor -- Mr. Clifford Yuen
2. Technical Graphics Occupations Instructor -- Mr. Daniel Sison
3. Construction/Civil Technology Occupations Instructor -- To be selected
4. CDE and COE Coordinator and Instructor -- Mrs. Madelyn D'Enbeau

D. Roles of Personnel (See proposals of Introduction to Vocations Workshop.)

E. Student Selection

1. Students selected during regular school registration program.

2. Additional student selections and placement will be done during month of September.

   a. By Counselor-Coordinator
   b. Area Instructors
   c. Regular counseling staff

F. Budgetary Needs (Current Year)

1. Facility Preparation -- September 1, 1970
2. Instructional Material Selection -- September 1, 1970
3. Purchasing of Supplies and Equipment -- September 15, 1970

G. Budgetary Needs for next school year -- 11/70

H. Program Evaluation

Counselor-Coordinator and team members will develop program plan for evaluation.

Possible expansion into other areas for 1971-72 school year.

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*New Programs

JAMES CAMPBELL HIGH SCHOOL

PLAN OF ACTION FOR INTRODUCTION TO VOCATIONS PROGRAM (1970-1971)

A. Programs for 1970-1971

1. Office Occupations

Data Processing*

3. Cooperative Office Education*
4. Automotive Technology*
5. Cooperative Distributive Education*

B. Time Line on Activities

1. Student selection

a. COE and CDE -- September, 1970
b. Automotive -- Completed

2. Testing

Pre-test in October; post-test in May

3. Class schedules

a. COE and CDE -- Completed by October 15, 1970
b. Automotive - Completed

4. Instructor selection -- Completed

5. Orientation -- August 17-28
Early September

6. Facility preparation -- September, 1970

7. Textbook selection -- September, 1970

8. Budget -- Allocation completed

Plans for 1971-72 -- May, 1971

9. Supplies and equipment -- October, 1970

10. Program evaluation -- Introduction to Vocations Team

*New Programs

WAIPAHU HIGH SCHOOL

PLAN OF ACTION FOR INTRODUCTION TO VOCATIONS PROGRAM (1970-1971)

A. Tentative Selection of Programs

1. Food Service
2. Drafting Technology*
3. Office Occupations
4. Building Construction Technology*
5. Distributive Education
6. Agricultural Technology
7. Ornamental Horticulture

B. Tentative Time Schedule for General Operations

September 1, 1970	General faculty orientation to Program
	Selection of Introduction to Vocations staff
	Selection of Introduction to Vocations students
September 15, 1970	Pre-test
September 30, 1970	Selection of Introduction to Vocations advisory committee
October 15, 1970	Community orientation to Introduction to Vocations (P.T.A., newsletter, media)
	Pre-inventory report of equipment, supplies, furniture
October 30, 1970	Deadline for furniture, equipment, and supply requests
	Deadline for minor facilities renovation requests
November 16, 1970	Tentative listing of Cooperative Businesses
November 30, 1970	Student's work schedule to job sites
February 1, 1971	Student opinion survey
May 19, 1971	Student opinion survey
May 26, 1971	Post-test
June 2, 1971	Final evaluation report

*New Programs

CASTLE HIGH SCHOOL

PLAN OF ACTION FOR INTRODUCTION TO VOCATIONS PROGRAM (1970-1971)

A. Programs to be Offered

1. Electronics Technology*
2. Metals Technology*
3. Agricultural Technology
4. Distributive Occupations
5. Ornamental Horticulture
6. Office Occupations
   Data Processing/Key Punch*

B. Introduction to Vocations Staff

1. Principal
2. Department heads involved in program
3. Introduction to Vocations teachers
4. Designated counselor
5. Registrar
6. Librarian

C. Student Selection

1. Agriculture, metals, and electronics will be comprised of advanced students in each area.

2. Business students will be selected through registration.

D. Orientation of Staff

1. Principal of school to explain, define and present rationale of program to entire staff.

2. Chairman of department involved will disseminate detailed information to his staff.

E. Facility Preparation

1. All teachers have room assignments.
2. Minimal supplies and equipment to implement program have been requested.

F. Program Needs

1. Textbooks
2. Visual aids
3. Equipment and maintenance
4. Renovation of physical facilities
5. Supplies

G. Evaluation

1. Instructional evaluation

   a. Student progress chart
   b. Standardized and teacher-made tests

2. Program evaluation

   a. Introduction to Vocations team would continuously evaluate the program through the use of surveys and other devices.

   b. Follow-up study of program participants by the counselor with the help of the Introduction to Vocations staff.

*New Instructional Program Offering

KAILUA HIGH SCHOOL

PLAN OF ACTION FOR INTRODUCTION TO VOCATIONS PROGRAM (1970-1971)

A. Programs for 1970-1971

1. Distributive Occupations
2. Office Occupations
3. Ornamental Horticulture
4. Building Construction Technology I*
5. Power and Automotive Technology I*
6. Metals Technology I*
7. Metals Technology II*
8. Graphic Arts Technology I*
9. Drafting Technology I*

B. Time Line on Activities

1. Testing -- To be built into program
2. Student selection -- Completed (Supplement as needed, September, 1970)
3. Student class schedules -- Completed (Adjusted as needed, September, 1970)
4. Additional personnel needed -- Vocational Construction Instructor
5. Orientation of staff -- First week of September, 1970
6. Plans for renovation -- End of September, 1970
7. Ordering of equipment -- End of September, 1970
8. Instructional materials -- Recommend one year in advance
9. Budget requests -- Second week of September, 1970
10. Program evaluation
    a. Personal contact and response, continuous
    b. Survey evaluation -- Students, teachers, and counselor
    c. Follow up of students

*New Programs

WAIMEA HIGH AND INTERMEDIATE SCHOOL

PLAN OF ACTION FOR INTRODUCTION TO VOCATIONS PROGRAM (1970-1971)

A. Programs Offered in 1970-1971

1. Distributive Education
2. Office Occupations
3. Cooperative Distributive Education*
4. Agricultural Technology
5. Ornamental Horticulture

B. School Coordinating Team - To provide decisions, directions, operation, and information of program

1. Administrator
2. Counselor
3. Business Education Chairman
4. Cooperative Distributive Education Teacher
5. Student Representative
6. West Kauai Businessmen's Association Representative
7. Hanapepe Merchants Association Representative
8. Labor Representative

C. Role of the

1. Administrator)
2. Counselor) Delineated in the section on
3. Distributive Education Teacher) Administrative and Staff Functions.
4. Other vocational teachers)

D. Time Line and Responsibilities - See next page.

E. Program Evaluation

1. Students' responses - written/verbal
2. Attitude/interest inventories
3. Follow-up testing
4. Practical experience gained
5. Placement and follow-up

F. Recommendations

Expansion:

a. Occupational Skills Program
b. Mechanical cluster
c. Electrical/electronics cluster

*New Program

Time Line and Responsibilities

Activity	Completed By	Primary Responsibility
Work Stations	4/30/70	Teacher; Team
Student Selection	5/15/70	Teacher; Team; Employer
Purchasing of Supplies and Equipment	7/1/70 - 1/30/71	
Budgeting for 1971-73	9/70	State
Facilities Preparation	9/1/70	Administrator; Teacher
Staff Orientation	9/1/70	Administrator; Team
Students' Schedules	9/11/70	Counselor; Administrator
Teacher's Schedule	9/11/70	Administrator
Instructional Materials Selection	9/15/70	Teacher; Specialist
Testing Attitude/Interest Inventories Narrative/Skills	9/30/70	Teacher; Counselor
Community Orientation	9/30/70	Administrator; Team
Evaluation	5/71	Administrator; Team
Budgeting for 1973-75 Personnel Supplies/Equipment CIP	7/72	Administrator; District

EXHIBIT B

TASK

ANALYSIS

TASK ANALYSIS

Digested from Developing Vocational Instruction,
by Robert F. Mager and Kenneth M. Beach, Jr.

A task is a logically related set of actions required for the completion of a job objective. A job or vocation includes a number of tasks. For example, one of the tasks that must be performed by the auto mechanic is that of adjusting brakes. All of the steps involved in adjusting a brake go to make up the complete task.

The first step in task analysis requires a listing of all the tasks that might be included in the job. The tasks can probably be identified and listed by just thinking about the job. But a much better list can be done by talking to individuals now working at the job or by watching the tradesman actually performing the job. This should help to refresh your memory and help you to avoid a serious teaching trap -- loading the course with irrelevant content.

Talking to the man on the job will tell you what the job is. Talking to the supervisor will tell you what it ought to be. Judgment will have to be made as to which tasks are reasonable to include in your list based on probability of need.

A note of caution -- You will not be teaching all of the tasks you list in your analysis. Some will be deleted because of their insignificance. But the important thing is to list all the tasks that go to make up the vocation.

It will be useful to list all these tasks on a simple form so that you can easily record the information you need to put down next. (See the sample form on the following page.)

The first column indicates how often each task is performed during the performance of a job. Do not try to think about the importance of the task. Just indicate the frequency with which the task is performed. This information will become very useful in deciding how deeply to go into the subject, how much practice to provide, and how to sequence the course lessons.

All tasks are not of equal importance in the performance of a job. Tasks that are performed frequently may not represent a critical skill. Other tasks, although performed rarely, are vital to job performance. For example, although a waiter must know how to clean off a table and may perform this task frequently, it is not nearly as important to the job as his ability to take orders correctly. Therefore, indicate the judgment of importance. Then, you will be able to determine which tasks must be included in the training and which can be left out if some selection becomes necessary.

The third column of the form requires your best estimate of whether each task is easy to learn, moderately difficult, or very difficult to learn. This information will also help you to determine the length of time that should be spent in teaching the task.

TASK LISTING SHEET

Vocation: Electronics Technician

NO.	TASK	FREQUENCY OF PERFORMANCE	IMPORTANCE	LEARNING DIFFICULTY
1.	Troubleshoots and repairs malfunctioning equipment.	Everyday occurrence	1	Difficult
2.	Reads electronic schematics.	1 to 10 times a day	2	Moderate
3.	Performs chassis layouts.	Once a week	2	Easy
4.	Uses small hand tools.	Continuously	1	Easy
5.	Checks electronic components.	Frequently	1	Moderate to very difficult
6.	Replaces components.	Once in a while	2	Easy to moderate
7.	Solders various components.	Frequently	2	Moderate
8.	Recognizes the applicability of electronic test equipment.	Once in a while	2	Difficult
9.	Interprets test instruments.	Frequently	1	Difficult
10.	Performs calibration of test equipment.	Once a month	3	Difficult
11.	Interprets and records test data.	Once in a while	3	Easy to moderate
12.	Specifies and orders electronic components.	Frequently	3	Easy
13.	Applies first aid procedures.	Very rarely	1	Moderate
14.	Maintains and cleans work areas.	Frequently	2	Easy

Listing Operations

The second step in task analysis is to list the operations involved in each of the tasks on the list in terms of what the person does when performing the task. This step emphasizes what is done, rather than in terms of what must be known.

The following is an example of a task that has been broken down into its main operational steps:

Example I

Job or Vocation: Electronics Technician

Task: Soldering components

Operations involved:

1. Identify joints to be soldered.
2. Select the appropriate iron and solder.
3. Clean joint and tin if necessary.
4. Place the iron on the joint.
5. Apply the appropriate amount of rosin core solder to the joint.
6. Check and examine the joint; seal if necessary.
7. Clean surroundings and replace the tools when finished.

While this may seem to be going into unnecessary detail, it must be stressed that these steps are essential in making intelligent choices of teaching techniques. With the task steps identified in this detail, we can better avoid the teaching trap of including more theory than is necessary or desirable and keep the course performance oriented.

There are probably as many techniques for performing a task analysis as there are people doing it. The technique described here, while not merely as detailed as some, is adequate for the job at hand. If you know of another technique that suits you better, by all means use it. The only large error you can make is not to use any task analysis technique at all.

EXHIBIT C

PRIVATE

TRADE,

VOCATIONAL AND TECHNICAL

SCHOOLS

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

10/73

SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Air/Travel Careers International Schools for Tourism 2379 Kuhio Avenue Honolulu, Hi 96815	Basic Air/Travel	Evening-250 hrs./ 18 weeks	To assist in training and retraining personnel for the various travel agency hotel and airline jobs in the State.	$650 + tax		Any Monday
		Day Class-250 hrs./ 12 weeks		$960 + tax		
	Abbreviated Air/ Travel	Evening-180 hrs./ 8 weeks		$485 + tax		
		Day Class-180 hrs./ 8 weeks		$485 + tax		
	Hawaiiana	20 hours		$75		
	English as a Second Language	40 hours		$75		
	Introductory Japanese	20 hours		$75		
	Conversational Japanese	20 hours		$75		
	International Hotel Service Procedure	Evening-55 hours/ 6 weeks		$1,000		
	Domestic Travel Planning	Day Class-250 hrs./ 12 weeks		$1,000		
	International Travel Planning	Day Class-250 hrs./ 12 weeks		$1,250		
	Domestic Hotel Service Procedure	Evening-40 hours/ 6 weeks		$650		
	Home Study Program	8-14 weeks/330 hrs.		$485		
American Travel Careers 210 Ward Avenue Honolulu, Hi 96814	Airline Sales and Ticketing Curr.	Day Class-70 hrs./ 4 weeks				
		Evening-72 hrs./ 8 weeks				

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Franz Griessler Private Art School 2085 Makiki Place Honolulu, Hi 96822	Portrait, Still-Life, Life-Class	3 hrs./10 lessons 3 hrs./10 lessons	Art for Avocational and Vocational Interests	$50		
Honolulu Academy of Arts Studio Program 900 So. Beretania St. Honolulu, Hi 96814	Drawing Studio Painting Studio Printmaking/ Etching Printmaking/ Lithography	Full Time 6 hours per day 30 hrs. per week for 34 weeks Part Time 3 hours per day 15 hrs. per week for 34 weeks	Developing skilled self-expression in the areas of painting, drawing, and commercial art.	Full Time Course $440 per semester Half Time Course $220 per semester	Registration Fee - $7.50 Lab Fee - $15 per semester for print-making	10/1/73
Electronics Institute 1111 Bishop Street Honolulu, Hi 96813	Electronics Engineering Technology Radio Electronics Radio Television	4-18 week terms 1-9 week terms (2,025 clock hours) 936 hours 1,440 hours	Provide job entry-level skills for students who wish to become service type technicians.	$610 per 18 weeks $305 per 18 weeks evening program $305 per 10 week summer session plus 4% state tax	Registration $10 Books and supplies - $150	9/4/73 and 1/25/74 and 9/3/74

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

10/73

SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
New York Technical Institute 1375 Dillingham Blvd. Honolulu, Hi 96817	General Mechanic	1,500 hours	Preparation for employment in the occupation.	$2,400	Registration $10 Books - $107.71 Plus state tax	Continuous
	Heavy Equipment Maintenance	1,494 hours		$2,100	Registration $10 Books - $129.11 Plus state tax	Continuous
	Electronics Technician	2,050 hours		$37.50 per week for 84 weeks	Registration $10 Books - $73.85 Plus state tax	Continuous
	Mechanical and Architectural Drafting	1,494 hours		$27.50 per week for 62 weeks	Registration $10 Books - $40 Plus state tax	Continuous

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Barbizon Modeling School of Hawaii, Inc. Suite 1230 1600 Kapiolani Blvd. Honolulu, Hi 96814	Major Modeling	54 clock hours	Preparation for professional modeling	$495 plus state tax	Registration fee of $10 included in tuition	Continuous
	Personal Improvement	45 clock hours	For personal improvement	$395 plus state tax	Registration fee of $10 included in tuition	
Patricia Stevens Finishing School 413 Pau Street Honolulu, Hi 96815	Fashion and Public Relations	25 weeks @ 25 hours per week	Careers in fashions, airlines, or public relations	$1,740	Registration $10	9/17/73 1/7/74
Bartenders Training Institute 830 Ala Moana Blvd. Honolulu, Hi 96813	Bartending	48 clock hours	Bartender	$195	Registration $10	Continuous

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Cannon's International College of Honolulu 33 S. King Street Honolulu, Hi 96813	Business Administration	63 weeks	Preparation for employment	$2,350	Registration $10	9/4/73
	Higher Accounting	63 weeks		$2,350		
	Accounting	36 weeks		$1,175	Books and supplies	2/4/74
	Bookkeeping	27 weeks		$875		
	Executive Secretary	63 weeks		$2,350		
	Legal Secretary	63 weeks		$2,350		
	Medical Secretary	63 weeks		$2,350		
	Airline Secretary	63 weeks		$2,350		
	Secretarial	45 weeks		$1,475		
	Keypunch/Clerk Typist	36 weeks		$1,700		
	Clerk Typist	36 weeks		$1,175		
	BBX Receptionist	27 weeks		$875		
	Hotel Management Procedures	45 weeks		$1,560		
	Hotel Front Office Management Procedures	45 weeks		$1,175		
	Taylor Airlines -- Operations/Reservations	60 hours		$1,175		
	Court Reporting	90 weeks		$2,950		
Computer Technology Center 445 N. King Street Honolulu, Hi 96817	Computer Programmer and/or Systems Analyst	16 months @ 24 hours per week	Employment as a programmer or analyst	$3,200	Registration $10	Continuous
	Computer Operator/ Programmer	6 months @ 25 hours per week	Employment as a computer operator or trainee	$1,200	Registration $10	

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Control Data Corporation Control Data Building 2828 Paa Street Honolulu, Hi 96819	Computer Science Systems Analysis	33 semester hours (22 months) 9 semester hours (6 months)	Employment in computer technology fields	$58 per semester hour		Starting schedule available at the school
Data Automation Institute Room 890 Pacific Trade Center Honolulu, Hi 96813	Keypunch/Verifier	70 clock hours	Keypunch operator	$250 plus state tax	Registration $10	Continuous
Hawaii Bar Review Course Suite 1211 841 Bishop Street Honolulu, Hi 96813	Hawaii Bar Review Course	120 clock hours	Preparation for State Bar Examination	$75	Instructional materials - $150	Announced by the school
Hawaii School of Business 111 N. King Street Honolulu, Hi 96817	Secretarial Accounting Higher Accounting Business Administration Shorthand Typing Accounting (night)	1,125 hours 1,125 hours 1,125 hours 1,125 hours 24 hours per term 24 hours per term 24 hours per term	Office occupations employment	$1,250 $1,250 $1,750 $1,750 $60 $60 $60	Registration $10 Books to be purchased by student	Beginning of a term

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
IBM Education Center 1240 Ala Moana Blvd. Honolulu, Hi 96814	IBM Computer Courses	Variable 1 to 15 days	Operator and Programmer Training	$85 to $1,175 (see schedule available at school)		As per printed schedule
Institute of Real Estate Salesmanship 4300 Waialae Avenue Apt. 1905 Honolulu, Hi 96816	Salesmanship in Real Estate	16 clock hours	Salesmanship in Real Estate	$75		As per schedule published by school
Institute of Simplified Mathematics Suite 208 2615 S. King Street Honolulu, Hi 96814	Simplified Mathematics	3 hours	None	$50		Variable
Japan America Institute of Management Science 6660 Hawaii Kai Drive Honolulu, Hi 96825	International Program	2 semesters	Mid-management training	$1,450	Registration $50	See school catalogue
	Japanese Program	5 months		$960		

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Kenway School of Accounting 1019-A University Ave. Honolulu, Hi 96814	Payroll Accounting Intermediate Accounting Accounting 234 Accounting 235	42 hours 42 hours 200 hours 100 hours	Occupations in basic and advanced accounting	$125 $137.50 $495 $247.50	Materials -- $10 Text -- $14.50	See school catalogue
National Business Training School 1032 Alakea Street Honolulu, Hi 96813	Bookkeeping Jr. Bookkeeping Clerk-Typist Checker-Cashier General Office Clerk Sec.-Stenographer File Clerk Account Clerk Payroll Clerk	500 hours 240 hours 120 hours 80 hours 240 hours 960 hours 100 hours 160 hours 200 hours	Office occupations	$625 $295 $175 $110 $300 $1,150 $130 $250 $275	$47.75 Books $19.00 Books $15.50 Books $5.00 Books $24.00 Books $56.50 Books $27.75 Books $18.75 Books	See school catalogue
Academy Beauty College 315 Royal Hawaiian Ave. Honolulu, Hi 96815	Cosmotology	1,800 hours	To qualify for the State Board of Cosmotology Exam.	$500	Registration $10 Books & Kit $55	Continuous
Gony's Beauty College 4369 Rice Street Lihue, Hawaii 96766	Cosmotology	1,800 hours	To qualify for the State Board of Cosmotology Exam.	$625 -- including Books & Kit	Registration $10	Continuous
Hilo School of Beauty 292 Kamehameha Ave. Hilo, Hawaii 96720	Cosmotology	1,800 hours	To qualify for the State Board of Cosmotology Exam.	$807	Registration $10 Books & Kit $70	Continuous

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Hollywood Beauty College 1423 Kapiolani Blvd. Honolulu, Hi 96814	Cosmotology	1,800 hours	To qualify for the State Board of Cosmotology Exam.	$700	Registration $10 Kit - $150.58 Tax - $34.42	Continuous
Royal School of Beauty Culture 295 Alexander Young Bldg. Honolulu, Hi 96813	Cosmotology	1,800 hours	To qualify for the State Board of Cosmotology Exam.	$400	Registration $10 Kit - $35 Tax - $17.50	Continuous
Trend Setters International Beauty College of Hawaii 1413 S. King Street Honolulu, Hi 96814	Cosmotology	1,800 hours	To qualify for the State Board of Cosmotology Exam.	$518.65	Registration $10 Kit & Tools - $53.00 Texts - $17 Manikin - $70 Tax - $26.35	Continuous
Honolulu Barber School, Ltd. 71 S. Hotel Street Honolulu, Hi 96813	Barbering	1,250 hours	Barbering	$475	Registration $10 Books, Equipment & Tax $140.40	Continuous

SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
H & R Block Income Tax Institute 666 Ala Moana Blvd. Honolulu, Hi 96813	Income Tax Preparation	81 hours	Basic Tax Preparation	$78		By announcement of school
		60 hours	Advanced Tax Preparation	$124.80		
Personalized Tax Service Aikahi Park Shopping Center, Room 209 Kailua, Hi 96734	Income Tax Preparation	54 hours	For employment in tax preparation	$25	Registration $10	By announcement of school
Artisan School of Interior Design Suite 25 1402 Kapiolani Blvd. Honolulu, Hi 96814	Basic Fundamentals of Interior Design	24 clock hours	For personal or occupational competency in interior design	$65 plus tax	Supplies - $6.08	Continuous
	Advanced Techniques of Interior Design	24 clock hours		$90 plus tax	Supplies - $12.38	
Medical Training & Registry Suite 306 838 S. Beretania St. Honolulu, Hi 96813	Medical Transcriptionist	300 hours	Employment in entry level medical occupations	$595	Registration $10	Continuous
	Medical Receptionist/Secretary	300 hours		$595	Books & Supplies-$40	
	Clinical Assistant	350 hours		$695	Books & Lab. Fee - $40	
	Medical Assistant	500 hours		$995	Books & Lab. Fee - $80	
	Nursing Assistant	100 hours		$195	Books & Lab. Fee - $25	

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Pacific Maritime Academy Ala Wai Yacht Harbor Honolulu, Hi	Merchant Marine Deck Officers	330 hours	Occupations relating to seamanship	$375	Textbooks and supplies furnished by student	Continuous
	1,000 Ton Freight & Towing Master and Mates	330 hours		$375		
	Able-Bodied Seaman and Lifeboat Certificate	110 hours		$125		
	Harbor Pilot	110 hours		$185		
	Motorboat Operator	48 hours		$185		
	Ocean Operator	48 hours		$185		
	Sailmaster	110 hours		$100		
	Radar Endorsement	110 hours		$ 85		
	Marine Diesel Engineering	330 hours		$375		
	Pacific Islands Merchant Marine Officers Training	330 hours		$300		
	Celestial Navigation	48 hours		$150		
	Inter-Island Navigation	12 hours		$ 85		
Reading Center Hawaii, Inc. Pacific Trade Center Suite 820 190 S. King Street Honolulu, Hi 96813	Reading Program	1 hour per day 5 days per week	Reading improvement	$6.75 per hour	Testing Fee $35	Continuous
	Math Program	1 hour per day 5 days per week	Math improvement	$6.75 per hour		

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Evelyn Wood Reading Dynamics Institute of Hawaii 33 S. King Street Honolulu, Hi 96813	Improvement of Reading Speed	24 hours	Reading speed improvement	$210		Continuous
Aina Kupono School of Real Estate 175 Market Street Wailuku, Hi 96793	Real Estate Salesman	45 clock hours	Preparation for Real Estate Salesman Examination	$175	Registration $10 Textbooks furnished by student	3 times a year
Aloha School of Real Estate Suite 800 745 Fort Street Honolulu, Hi 96813	Real Estate Salesman	40 clock hours	Preparation for Real Estate Salesman Examination	$100	Textbooks furnished by student	3 times a year
The Bartholomew Real Estate Foundation 307 Hahani Street Kailua, Hi 96734	Real Estate Salesman Course	40 hours	Real Estate Salesman	$200 plus state tax	Textbooks furnished by student	3 times a year
	Real Estate Brokers Course	42 hours	Real Estate Broker	$225 plus state tax	Textbooks furnished by student	3 times a year

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
John Buttrick School of Real Estate 602 Kailua Road Kailua, Hi 96734	Real Estate Salesman Course	49 hours	Real Estate Salesman	$170 - including books and supplies		3 times a year
Century 21 School of Real Estate Suite 104 681 S. King Street Honolulu, Hi 96813	Real Estate Salesman Course	45 hours	Real Estate Salesman	$125	Registration $10 Books - $25	3 times a year
Walter N. Clark Realty Co., Ltd. Suite 211 1210 Auahi Street Honolulu, Hi 96814	Real Estate Salesman	40 hours	Real Estate Salesman	$100	Books and materials - $25 plus tax	3 times a year
	Real Estate Broker	46 hours	Real Estate Broker	$200	Books and materials - $25 plus tax	
George W. Clarke School of Real Estate 45-1048-G Kam Highway Kaneohe, Hi 96744	Real Estate Salesman	44 hours	Real Estate Salesman	$150	Registration $10 Students furnished texts	3 times a year

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Harris Real Estate School Suite 202 4747 Kilauea Avenue Honolulu, Hi 96816	Real Estate Salesman	42 hours	Real Estate Salesman	$150	Texts-$16.76	3 times a year
	Real Estate Broker	36 hours	Real Estate Broker	$200	Texts-$28.87	
Hawaiian School of Real Estate Room 12 1410 Kapiolani Blvd. Honolulu, Hi 96814	Real Estate Salesman	52-1/2 hours	Real Estate Salesman	$125	Students furnish texts	3 times a year
Honolulu Real Estate School 1341 Lusitania Street Honolulu, Hi 96813	Real Estate Salesman	54 hours	Real Estate Salesman	$125	Registration $10 Students furnish texts	3 times a year
Interstate Properties School of Real Estate Suite 336 210 Ward Avenue Honolulu, Hi 96814	Real Estate Salesman	50 hours	Real Estate Salesman	$25	Registration $10 Texts furnished by student	3 times a year

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Kinji Kanazawa Real Estate School c/o 950 First Hawaiian Bank Bldg. Honolulu, Hi 96813	Real Estate Salesman	42 hours	Real Estate Salesman	$150	Texts furnished by student	3 times a year
Komori Real Estate School 4369 Rice Street Lihue, Hi 96766	Real Estate Salesman	40 hours	Real Estate Salesman	$125	Texts furnished by student	3 times a year
	Real Estate Broker	42 hours	Real Estate Broker	$175		
Mike McCormack School of Real Estate 841 Bishop Street Honolulu, Hi 96813	Real Estate Salesman	50 hours	Real Estate Salesman	$175	Texts furnished by student	3 times a year
	Real Estate Broker	48 hours	Real Estate Broker	$175		
John S. Mykut Real Estate School 1387 Queen Emma Street Honolulu, Hi 96813	Real Estate Salesman	50 hours	Real Estate Salesman	$125	Registration $10 Materials - $25	3 times a year

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Professional School of Real Estate Suite 1214 2222 Kalakaua Avenue Honolulu, Hi 96815	Real Estate Salesman	40 hours	Real Estate Salesman	$165-includes text, registration		3 times a year
	Real Estate Broker	56 hours	Real Estate Broker	$200-all costs		3 times a year
Real Estate Academy Suite 206 33 S. King Street Honolulu, Hi 96813	Real Estate Salesman	44 hours	Real Estate Salesman	$125	Registration $10	3 times a year
Real Estate Schools of St. Michael 98-316 Kam Highway Aiea, Hi 96701	Real Estate Salesman	45 hours	Real Estate Salesman	$90	Registration $10	3 times a year
John F. Stapleton School of Real Estate Suite 2121 841 Bishop Street Honolulu, Hi 96813	Real Estate Salesman	40 hours	Real Estate Salesman	$225-Texts included	Registration $10	3 times a year
	Real Estate Broker	50 hours	Real Estate Broker	$250-Texts included	Registration $10	
Stark Schools, Inc. 736 South Street Room 203 Honolulu, Hi 96813	Real Estate Salesman	42 hours	Real Estate Salesman	$150-Texts included	Registration $10	3 times a year

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Vitousek Real Estate Schools Room 5 645 Kapiolani Blvd. Honolulu, Hi 96813	Real Estate Salesman	42 hours	Real Estate Salesman	$170-including all materials		3 times a year
	Real Estate Broker	42 hours	Real Estate Broker	$180-including all materials		
Waikiki Realty Real Estate School Suite 303 4211 Waialae Avenue Honolulu, Hi 96816	Real Estate for Salesmen	44 hours	Real Estate Salesman	Free		3 times a year
	Real Estate Broker	44 hours	Real Estate Broker	Free		
Fashion Center 1236 S. King Street Honolulu, Hi 96814	Dressmaking	960 hours	Commercial Sewing	$40 per mo.	Registration $5	Continuous
	Advanced Dressmaking	960 hours	Commercial Sewing	$40 per mo.	Registration $5	

PRIVATE TRADE, VOCATIONAL AND TECHNICAL SCHOOLS

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Fashion Institute 1540-A Makaloa Street Honolulu, Hi 96814	Costume Design, Dressmaking, and Tailoring	1,075 hours (38 weeks)	Commercial Sewing	$450	Registration $5	Continuous
	Advanced Costume Design, Tailoring and Dressmaking	1,075 hours (38 weeks)	Commercial Sewing	$450	Registration $5	Continuous
Hawaii School of Fashion Design 1083 S. Beretania St. Honolulu, Hi 96814	Costume Design, Dressmaking, and Tailoring	1,080 hours	Commercial Sewing	$400	Registration $10	Continuous
	Advanced Costume Design, Dressmaking and Tailoring	1,080 hours	Commercial Sewing	$400	Registration $10	
Honolulu Mary'Nette Sewing School 1157 Fort Street Mall Room 3 Honolulu, Hi 96813	Dressmaking, Designing, Styling, and Pattern Drafting	960 hours	Commercial Sewing	$40 per mo.	Registration $5	Continuous
	Commercial Pattern and Adjustment, Alteration and Finishing Work	960 hours	Commercial Sewing	$40 per mo.		
Honolulu Practical Sewing School 1302 Young Street Honolulu, Hi 96814	Beginners Course in Sewing	960 hours	Commercial Sewing	$370 per yr.	Registration $5	Continuous
	Advanced Course in Sewing	960 hours	Commercial Sewing	$370 per yr.	Registration $5	Continuous

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SCHOOL AND ADDRESS	COURSES OFFERED	LENGTH	OCCUPATIONAL OBJECTIVES	TUITION	OTHER COSTS BOOKS, ETC.	ENTRANCE DATES
Kaimuki Sewing School 2184 Waialae Avenue Honolulu, Hi 96816	Dressmaking	960 hours	Commercial Sewing	$400	Registration $5	Continuous
	Tailoring	480 hours	Commercial Sewing	$200	Registration $5	
	Costume Design	480 hours	Commercial Sewing	$200	Registration $5	
Kaneohe Sewing School 45-520 Keaahala Road Kaneohe, Hi 96744	Dressmaking	960 hours	Commercial Sewing	$450	Registration $5	Continuous
	Tailoring	480 hours	Commercial Sewing	$225	Registration $5	
	Costume Design	480 hours	Commercial Sewing	$225	Registration $5	
Style Center Room 203 1350 S. King Street Honolulu, Hi 96814	Dressmaking	960 hours	Commercial Sewing	$500	Registration $10	Continuous
	Tailoring	480 hours	Commercial Sewing	$250	Registration $10	
	Costume Design	480 hours	Commercial Sewing	$250	Registration $10	
	Advanced Production Techniques	480 hours	Commercial Sewing	$250	Registration $10	
Tsunada School of Fashion 619 Kapahulu Avenue Honolulu, Hi 96815	Dressmaking	960 hours	Commercial Sewing	$35 per wk.	Registration $10	Continuous
Umemoto Sewing School 3329 Sierra Drive Honolulu, Hi 96816	Dressmaking	960 hours	Commercial Sewing	$45 per mo.	Registration $5	Continuous

EXHIBIT D

STANDARD

EQUIPMENT AND TOOL

LISTS

BUSINESS OCCUPATIONS

Office Education
Office Practice
Business Machines

STANDARD EQUIPMENT AND TOOL LIST

Item	Quantity	Approximate Unit Cost
Adding-Listing Machine, 10-Key	6	$225.00
Adding-Listing Machine, Full-Keyboard	1	134.00
Calculator, electronic	4	756.00
Calculator, printing	1	466.00
Calculator, Key-driven manual	2	325.00
Transcribing machine	2	487.00
Typewriter, electric, diff. spacing	8	525.00
Typewriter, electric, standard	8	420.00
Typewriter, elec., w/interchangeable type font	1	370.00
Stencil duplicator with cabinet	1	601.00
Spirit duplicator & copying machine combination	3	786.00
Mimeoscope	3 sets	67.00
Styli and lettering guides	1	54.00
Posting machine (optional)	1	
Billing machine (optional)	1	
Interval timer	1	27.00
Stop watch	1	18.00
Collating rack	1	26.00
Postal scale	1	11.50
Demonstration stand	1	52.00
Stapler, long arm, 16"	1	8.00
2-hole punch	1	3.00
3-hole punch	1	15.00
Paper cutter, 18" w/metal guide	1	26.00
4-drawer, metal file cabinet, legal with lock	1	129.00
Double-deck desk tray	3	4.00
Work organizer	2	7.50
Overhead projector and accessories	1	250.00
Tape recorder	3	125.00

STANDARD EQUIPMENT AND TOOL LIST

Item	Quantity	Approximate Unit Cost
Adding machine, 10-key	6	$ 225.00
Adding machine, Full keyboard	1	134.00
Bow machine	1	95.00
Spirit duplicator	1	490.00
Demonstration stand	1	52.00
Typewriter, electric	3	420.00
Interval timer	1	27.00
Stop watch	1	18.00
Paper cutter	1	25.00
Stapler, long arm, 16"	1	20.00
2-hole punch	1	3.00
3-hole punch	1	14.50
Mirror alcove	1	150.00
Show case	2	225.00
Sales counter	1	200.00
Wrapping counter	1	130.00
Cash register	1	1,253.00
Produce scale	1	375.00
Overhead projector and accessories	1	250.00
Price marking machine	1	87.50
Mannequins, with stands	4	172.00
Mock merchandise	1 set	100.00
Wrapping paper holder and cutter	2	10.00
Magazine rack	2	30.00
Assorted tee stands (15 to a set)	1 set	31.60
File cabinet, 4-drawer, steel (legal size)	2	124.00
Double-deck desk trays	3	4.00
Bulletin card stand	1	33.75
Combination displayer (3 to a set)	1 set	46.50
Counter mirror	1	9.95
Gun tacker	1	13.00
Hollow half forms (6 to a set)	1 set	30.00
Postal scale	1	11.00
Record player	1	87.00
Tape recorder	1	120.00

BUSINESS OCCUPATIONS

STANDARD EQUIPMENT AND TOOL LIST

Agricultural Technology

Item	Quantity	Approximate Unit Cost
MAJOR EQUIPMENT		
Anvil, 70# and stand	1	$ 105.00
Bench, metal working	2	195.00
Bench, wood working	2	160.00
Drill, portable, 1/2"	1	85.00
Grinder, bench, 7"	1	80.00
Grinder, portable, electric, 110v	1	115.00
Hammer, electric, portable	1	90.00
Jack, hydraulic floor, 2T cap.	1	60.00
Merry Tiller, 5 hp.	2	375.00
Oxy-acetylene, welding and cutting	1	127.00
Refrigerator	1	500.00
Sander, disk, portable	1	80.00
Sander, belt, portable	1	115.00
Saw, portable, 7-1/4" complete	1	105.00
Saw, sabre, heavy duty	1	112.00
Scale, platform, 1,000#	1	120.00
Shear, portable, 10 gal. capacity	1	110.00
Sink, porcelain, dressing, stainless	1	250.00
Sprayer, power, complete, 50 gal.	1	375.00
Table, grading, stainless steel, 3'x10'	1	275.00
Tub, washing	2	75.00
MINOR TOOLS AND EQUIPMENT		
Auger, soil, 1-1/4 diameter, 40" long	1	11.00
Bar, wrecking	3	5.00
Bit, expansion, 7/8" - 2-1/2"	1	3.50
Bit, wood drill, 3/16" - 1/2" by 16ths	1 set	7.00
Bob, plumb, 10 oz., general	1	7.50
Brace, 8" and 10"	2	5.00
Chisel, wood working, various, 1/4"-1/2"	1 set	20.00
Chisel, cold, various	1 set	15.00
Clippers, bolt	1	25.00
Counter sink, 5/8", 3/4"	2	3.00
Cutter, pipe	1	18.00
Extension cord, 50 ft.	1	6.00
File, machinist, various	6	.75
Goggles, welding	6	2.25
Goggles, safety	6	1.75
Hammers, ball pein	6	3.75
Hammers, claw	6	3.75
Hammers, sledge, 8#	2	7.65
Hammers, welding	3	3.75
Hatchet, brood, 4-1/2" cut	2	5.00
Helmets, welding	6	8.00
Hoes, nursery	12	3.50
Knife, boning	3	3.00

STANDARD EQUIPMENT AND TOOL LIST

(continued)

Item	Quantity	Approximate Unit Cost
Knife, butcher	3	$ 2.00
Knife, putty	2	1.50
Knife, sticking	2	2.00
Mallet, carpenters	1	3.50
Level, carpenter's, 24", aluminum	1	15.00
Pipe threader, ratchet, 5 sizes	1 set	75.00
Plane, jack, 14", 2" cutter	1	15.00
Plane, smoothing, 9", 2" cutter	1	12.00
Puller, nail	1	15.00
Pliers, cutting	2	2.00
Pliers, fence	2	3.60
Pliers, general use	6	2.75
Saw, compass	1	7.50
Saw, cross cut, 26", 8 pt.	3	15.00
Saw, hacksaw	2	7.50
Saw, rip, 26", 5 pt.	1	15.00
Screwdrivers, assorted	6	1.75
Screwdrivers, Philips, assorted	6	1.75
Snips, circular	1	3.50
Snips, tin	2	4.50
Respirators, chemical	3	8.65
Respirators, dust	6	2.75
Shovel, D-handle, short handle	6	5.50
Shovels, hollow bale, long handle	6	6.00
Sprayers, knapsack, 3 gal., capacity	4	56.00
Square, Try, 8"	2	2.50
Square, framing, 16" x 24"	2	7.50
Tap and die set	1 set	75.00
Tape, steel	1	15.00
Wheelbarrow	2	45.00
Wrenches, adjustable, 4", 6", 8", 10", 12"	1 set	16.00
Wrenches, allen	1 set	3.00
Wrenches, pipe, 12", 14", 16"	1 set	35.00
Wrenches, open end set	1 set	16.00
Wrench, vice grip, 7", 10"	1 set	16.00
Wrench, socket set, 1/2" drive	1 set	37.00
SPECIAL TOOLS AND EQUIPMENT NEEDED FOR ADDITIONAL SPECIFIC OCCUPATIONAL EXPERIENCES		
Brooder, battery	1	160.00
Cage, 12 bird unit	5	50.00
Debeaker, electric, 110v	1	60.00
Feather picking machine	1	350.00
Heater, water, electric, 50 gal.	1	120.00
Refrigerator, walk-in, 6'x6'x8'	1	1,200.00
Tank, scalding, poultry	1	350.00
Tank, cold water, poultry	1	200.00

STANDARD EQUIPMENT AND TOOL LIST

Agricultural Technology

(continued)

Item	Quantity	Approximate Unit Cost
Chute, squeeze, portable	1	$ 800.00
Compressor, portable, gasoline, 32 gal. cap.	1	350.00
Post hole digger, portable, gasoline engine	1	350.00
Saw, chain, 16"	1	225.00
Trailer, animals	1	600.00
Welder, arc, complete with accessory	1	600.00
Husker, Macadamia complete	1	250.00

Ornamental Horticulture

STANDARD EQUIPMENT AND TOOL LIST

Item	Quantity	Approximate Unit Cost
MAJOR EQUIPMENT		
Autoclave	1	$359.00
Automatic watering system with time clock	1	300.00
Burner, weed, kerosene	1	65.00
Chemical proportioner	1	250.00
Germinator, portable, electric	1	50.00
Heater, water, 60 gal. capacity, 220 volt	1	120.00
Hedger, electric	1	75.00
Hot plate, 2 burner, electric	1	25.00
Ladder, folding, 8'	1	30.00
Lantern melter, alcohol	3	10.00
Magnifier, illuminated,	1	50.00
Meter, pH	1	200.00
Mold, bonsai pot, cast aluminum, various various sizes	1	200.00
Mold, pot, cast aluminum, 4"-6"-8"-10"-12"	1	200.00
Mower, green, manual, 9 blade	1	300.00
Mower, power, 21", reel	1	175.00
Shredder (compost machine)	1	300.00
Soil mixer, 1 cubic yard, 3 H.P., 110 volt	1	500.00
Soil sterilizer, 1 cu. yd. capacity	1	900.00
Sprayer, power, 20 gal., fiberglas lined	1	260.00
Sprayer, power mister, Knapsack	1	375.00
Sprayer, 2 gal., stainless steel with pressure indicator	1	50.00
Sprayer, Knapsack, stainless steel	1	75.00
Tiller, merry, complete with attachments	1	375.00
Wheelbarrow, construction type, rubber wheel	2	45.00
MINOR EQUIPMENT AND TOOLS		
Auger, soil, 3" diameter	1	19.00
Axes, standard, heavy duty	3	7.50
Brush cutter, Forrester, heavy duty	1	15.00
Caliper, tree	1	10.00
Can opener, heavy duty	1	15.00
Hammer, carpenter	3	7.50
Hoes, garden	10	6.00
Hose, garden, 50 feet	2	7.50
Pipe cutter and blades	1	25.00
Pipe threader and set	1	75.00
Pipe vise, portable	1	35.00
Pipe, die set	1	25.00
Pruner, heavy duty	3	7.00
Rake, floral	3	4.50
Rake, lawn	3	3.00
Respirator	6	3.50

STANDARD EQUIPMENT AND TOOL LIST

(continued)

Item	Quantity	Approximate Unit Cost
Saw, hand, 26", 8 point	1	$12.00
Saw, hand, 26" 10 point	1	12.00
Saw, pruning, 12", 14"	3	7.00
Saw, pruning, poled 12"	1	15.00
Shears, hedge, landscaping hand	2	12.00
Shears, pruning, heavy duty	6	12.00
Shears, lopping	2	10.00
Shovel, garden, long handle	3	7.00
Soil thermometer	1	6.00
Soil testing kit	1	30.00
Spade, solid shank	3	12.00
Sprinkler, Whirling	2	6.50
Tin snip	2	7.50
Trowel	6	3.50
Wax pot, grafting	3	3.00
Wire snip	2	7.50
Wrenches, pipe, assorted, 6"-8"-10"-12"	4	20.00
Grafting knives	12	4.50

PERSONAL/PUBLIC SERVICE OCCUPATIONS

Child Care Service

STANDARD EQUIPMENT AND TOOL LIST

Item	Quantity	Approximate Unit Cost
NURSERY SCHOOL FURNISHING & SUPPLIES		
Bookcase	1	$ 50.00
Bulletin board, peg board, or magnetic board	1	25.00
Cabinets for storage	1	380.00
Carpet (or area rugs), washable preferred, (omitted in lunch area). Vinyl floor covering may be used.	1	250.00
Chairs and tables for fifteen children		
Tables	4	55.00
Chairs	15	7.50
Chalkboard and screens	1	25.00
Child size book display rack	1	14.95
Childrens' books	50	2.00
Dishes, silver & trays for food service for 15 children		100.00
Drying racks for art work	3	4.00
Fixed easel	3	20.00
Food cart	1	25.00
Instructor's supplies: books, file cabinet, music, paper, paints, crayons, scissors		500.00
Mats for children's rest period	15	8.00
Medicine cabinet	1	25.00
Record player	1	40.00
Records	15	3.00
Shelving for toys	2	300.00
Wardrobe shelving or lockers (if H.E. tote trays are not available)	2	300.00
OUTDOOR PLAY EQUIPMENT		
Basketball	1	1.00
Buckets	4	1.75
Rakes	3	1.65
Shovel set	1	1.00
Simple outdoor play swings, etc., small size	1	250.00
Tricycles, varied sizes	4	15.00
Wagons	3	9.00
Watering cans	2	1.75
Wheelbarrows	2	3.50
INDOOR PLAY EQUIPMENT		
Baking set	1	2.00
Balls	1	2.00
Blocks and cart - different sizes & types		300.00
Brooms	2	.60
Chest of drawers	1	25.00
Construction toys (Tinker Toy type)	1	3.00

Child Care Service

STANDARD EQUIPMENT AND TOOL LIST (continued)

Item	Quantity	Approximate Unit Cost
Cooking pans	1	5.00
Cymbals	2	.78
Dish pan	1	.25
Doll bed	1	11.00
Dolls	3	10.00
Hammer	1	1.00
Hammer-Nail set	1	1.75
Hutch cupboard	1	29.00
Ironing board and iron	1	10.00
Jingles	3	.60
Play dishes and silverware	1	1.98
Pounding bench	1	3.00
Puzzles	8	1.50
Refrigerator	1	23.00
Rhythm sticks	6	.15
Saw	1	1.25
Sink	1	22.00
Snap-it-on building blocks	1	3.00
Stove	1	22.00
Tambourine	1	1.35
Telephones	2	1.00
Toy clock	1	5.00
Triangle musical instrument	1	1.50
Trucks, different sizes and types	6	15.00
Workbench and vise	1	38.00

STANDARD EQUIPMENT AND TOOL LIST

In addition to the regular Consumer and Homemaking Standard Equipment and Tool List, the following equipment and tools are recommended for the Food Service Program. Large commercial foods equipment is not included in the list. Demonstrations on use and care of larger equipment may be arranged through commercial equipment companies and/or the school cafeterias.

Item	Quantity	Approximate Unit Cost
LARGE EQUIPMENT		
Can opener (Institutional)	1	$ 14.00
Coffee maker and server, 3 burner (Institutional)	1	250.00
Coffee urn, 50 cups	1	30.00
Demonstration table, mobile	1	440.00
Electric slicing knife	1	22.00
Mixer, 5 qt. w/attachment (heavy duty)	1	250.00
Rice cooker, automatic, 25 cups	1	50.00
Scale, bakers, w/weights (Institutional)	1	75.00
Scale, portion	1	25.00
Timer	2	7.50
KITCHEN UTENSILS		
Cash box	1	5.25
Cutlery, steel	1	6.00
Cutting board	4	9.00
Dough cutter, 6" x 3" blade	4	3.00
Flour sieve, 14" metal sides	2	12.00
Knives		
French 12"	6	15.00
Boning 6"	4	5.25
Slicer 12"	4	10.00
Paring 3"	6	4.00
All-purpose 8"	6	7.00
Butcher 12"	2	6.25
Ladles - 1/3 pt., 6 oz., 4 oz.	2 ea.	1.50
Measurer, aluminum		
1/2 qt.	2	3.50
1 qt.	2	5.50
2 qt.	2	7.50
4 qt.	2	8.25
Mixing bowl set, 1½ qt., 2½ qt., 4 qt.	4 sets	10.00
Pastry bag w/tips	4	6.50
Pastry brush, round	4	2.25
Pastry brush, 1½"	4	1.25
Pastry brush, 3"	4	2.50
Ring mold, 5-6 cup	4	4.00
Scoops #8, 10, 12, 16, 24 and 40	2 ea.	3.98
Spring form cake pan	4	5.75

STANDARD EQUIPMENT AND TOOL LIST

Item	Quantity	Approximate Unit Cost
KITCHEN UTENSILS (continued)		
Thermometer		
Candy	2	2.50
Meat	2	4.50
All purpose	4	3.00
Whip, s.s., assorted #10, 12, 14	2 ea.	4.00
POTS AND PANS		
Double boiler, 5-1/2 qt.	2	17.00
Fry pan, 12" w/cover	4	11.00
Roaster, oval 18"	1	20.85
Roasting pan, 18 x 12 x 2	4	8.00
Sauce pan, long handle, flat bottom		
4-1/2 qt.	4	6.50
5-1/2 qt.	4	7.50
7 qt.	4	8.95
Stock pot w/cover, 5 gallon (Heavy duty)	2	16.00
DISHES, GLASSWARE, SILVER, ETC. (Place setting for 36, institutional type)		
Glassware		
Goblets	36	1.50
Sherbert	36	1.00
Juice glasses	36	.75
Beverage glasses	36	1.00
Linens		
Table cloth	6	6.00
Place mats	36	2.00
Napkins	36	1.50
Pitchers	6	4.00
Trays, round	6	4.00
Tray stand	3	25.00

STANDARD EQUIPMENT AND TOOL LIST

Item	Quantity	Approximate Unit Cost
EQUIPMENT		
Compressor, 60 gal. tank, 1-1/2 hp. w/belt guard and regulator	1	$756.00
Drill, portable, electric, 1/4" cap.	1	54.00
Drill, portable, electric, 1/2" cap.	1	95.00
Drill press, 15" floor	1	300.00
Grinder, 7" tool, 1725 RPM, w/sharpening attachment	1	265.00
Mitre box, w/26" saw	1	75.00
Router, portable, electric, 7/8 hp., w/access.	1 kit	150.00
Sander, 12" disc, w/blower	1	295.00
Sander, 6" x 48" belt, w/blower	1	440.00
Sander, portable, electric, belt, 3" x 24"	1	160.00
Sander, portable, electric, finishing	1	89.00
Saw, band, 20", 1 hp.	1	830.00
Saw, jig, 24"	1	290.00
Spray unit, w/cup and 25' hose	1 set	118.00
Torch, blow	1	24.00
Vise, machinist's, 3-1/2"	1	35.00
Vise, woodworking, 4" x 7", rapid action w/aluminum handle	32	24.00
TOOLS		
Awl, scratch, 6"	3	.95
Bar, wrecking, 36"	1	3.50
Bit, brace, ratchet, 10"	3	12.00
Bit, auger, #4 to #16 by 16ths	1 set	28.50
Bit, expansive, 7/8" to 3"	1 set	6.50
Bit, Forstner, 1/4", 3/8", 1/2"	1	8.50
Bits & chisels, mortiser, 1/4"	1 set	14.50
Bits & chisels, mortiser, 5/16"	1 set	14.50
Bits & chisels, mortiser, 3/8"	1 set	17.30
Bits & chisels, mortiser, 1/2"	1 set	18.25
Burnisher	2	2.50
Card file	6	.75
Caliper, inside and outside spring type, 8"	3 each	5.50
Chisel, wood, butt, 1/4", 3/8", 1/2", 3/4", 1"	2 each	10.50
Clamp, bar, 4', 5', 6' (set)	6 sets	23.00
Carving tool set, professional	1 set	30.00
Clamp, C, 3", 4", 5", 6", 8", 10"	6 sets	19.00
Countersink, rose, 1/2", 5/8"	1 each	1.10
Divider, wing, 8" and 10"	1 set	8.75
Dowelling jig	1	6.50
Drill, twist, straight shank, carbon, 1/16", 3/32", 1/8", 5/32", 3/16", 7/32"	6 each	18.00
Drill, twist, straight shank, cargon, 1/4", 5/16", 3/8", 7/16", 1/2"	3 each	16.05

STANDARD EQUIPMENT AND TOOL LIST

(continued)

Item	Quantity	Approximate Unit Cost
Drill, automatic	2	$ 5.50
Drill, hand, 1/4" capacity	2	8.33
Dresser, wheel, #0	1	3.65
File, auger bit, 7"	2	.60
File, flat mill, bastard cut, 10"	4	.95
File, half-round, double cut, bastard, 10"	2	1.20
File, square, double cut, bastard, 10"	2	.95
File, surform, #296, #295	2 each	6.50
File, slim taper, 7"	2	.85
Gauge, bit	2	1.20
Gauge, marking	2	.90
Glass cutter, turret head	1	.88
Handscrew, #0, 4" opening	12	3.50
Handscrew, #1, 6" opening	12	4.25
Handscrew, #2, 8" opening	12	4.65
Handscrew, #3, 10" opening	4	5.75
Hammer, claw, 16 oz.	12	3.75
Hammer, claw, 13 oz.	6	3.95
Hammer, upholsterer's magnetic, 7 oz.	1	3.25
Hammer, soft face, 16 oz.	2	3.05
Knife, draw	1	1.75
Knife, sloyd	4	.90
Knife, putty	3	.45
Level, 24", 30"	1 each	16.50
Mallet, hickory, 3" x 5"	6	1.10
Nail set, 1/32", 2/32", 3/32"	3 each	.38
Oilstone, crystolin, 2" x 7" x 1"	2	2.30
Oiler, 1/2 pt., 5"	3	1.05
Plane, block	6	6.25
Plane, smooth	6	9.35
Plane, jack	12	9.10
Plane, jointer	1	18.50
Plane, rabbit	1	2.60
Plane, router	1	9.40
Pliers, side cutting, 7"	1	3.25
Pliers, long nose, 6"	2	2.95
Pliers, combination, 6" and 8"	2 sets	4.25
Puller, nail	1	5.25
Rasp, wood, cabinet, smooth, 10"	6	2.10
Rasp, wood, cabinet, bastard, 10"	6	1.80
Respirator	2	4.50
Rule, push-pull, 8'	2	2.50
Rule, bench, steel, 1-1/4" x 12"	12	2.85
Rule, zig-zag, 6'	3	2.50
Saw, crosscut, 8 pt.	4	7.95
Saw, crosscut, 10 pt.	2	8.10
Saw, rip, 5-1/2 pt.	2	8.10
Saw, back, 15 pt., 12"	6	5.95

STANDARD EQUIPMENT AND TOOL LIST

(continued)

Item	Quantity	Approximate Unit Cost
Saw, coping	6	$ 1.25
Saw, compass, 12"	1	2.50
Saw, hack, 12"	1	3.05
Saw, keyhold, 10"	1	2.60
Scraper, cabinet, #80	4	3.85
Scraper, wood	4	1.20
Screwdriver, 2", 4", 6", 8"	4 sets	5.20
Screwdriver, Phillips, 3" and 4"	2 sets	2.90
Screwdriver, spiral, w/bits	1 set	4.50
Shield, face, 8"	6	4.40
Stone, slip, gouge	1	2.10
Spokeshave	3	1.45
Square, try, 8"	12	2.20
Square, framing, 24"	2	7.95
Snip, tin, 2-1/2" cut	1	3.95
Square, T-bevel, 8"	4	2.40
Turning tools	2 sets	38.50
Trammel points	1 pair	2.15
Wrench, crescent, 6" and 8"	2 sets	5.00
Wrench, combination open and box, 5/16" x 1"	1 set	48.00
Wrench, Allen	1 set	2.35
SPECIAL TOOLS AND EQUIPMENT NEEDED FOR ADDITIONAL SPECIFIC OCCUPATIONAL EXPERIENCES		
Bandsaw	1	750.00
Drill, electric, portable	2	150.00
Dust collection system (if not built in)	1	10,000.00
Electronic wood welder	1	750.00
Hose, air, 25', 3516-1402, w/fittings	1	11.50
Jointer, 8"	1	635.00
Laminating press	1	400.00
Lathe, 14" wood	1	650.00
Mortiser	1	850.00
Plane, portable	1	165.00
Router, portable	1	85.00
Sander, 3" x 24", 4" x 27" belt, portable	2	160.00
Sander, 7" disc, portable	1	90.00
Sander, finishing, portable	2	80.00
Saw, all-purpose, portable	1	105.00
Saw, bayonet, portable	1	115.00
Saw, 6" and 7-1/4" circular, portable	1	80.00
Saw, panel, 2-way	1	365.00
Saw, radial, 12"	1	550.00
Saw, 12" table	1	600.00
Spray unit	1	118.00
Surfacer, 6" x 20"	1	1,500.00

STANDARD EQUIPMENT AND TOOL LIST

Building Construction

(continued)

Item	Quantity	Approximate Unit Cost
Uniplane	1	$ 150.00
Vacuum cleaner or blower system, complete w/fittings (if central dust collection system is not possible)	1	1,540.00
PLUMBING TOOLS		
Pipe vise	1	23.00
Pipe cutter	1	23.40
Pipe reamer	1	24.50
Pipe wrench, 10" and 12"	1 each	12.00
Tube cutter with reamer	1	
Asbestos gloves	2 pairs	7.95
Melting pot (small)	1	14.10
Ladle (small)	1	7.70
Conduit bender, 1/2"	1	7.15
ELECTRICIAN'S TOOLS		
Cable stripper	1	5.70
Electrician's knife	2	3.25
B & S Wire gauge	2	7.90
MASON'S TOOLS		
Funnel	1	.60
Tin snips	2	8.90
Brick chisel	2	2.05
Brick hammer	2	4.35
Mortar box or wheelbarrow	1	85.00
Mixing hoe	2	8.45
Shovel	2	5.72
Extension cord, 25'	2	4.05
Hawk (plaster's)	2	3.75
Caulking gun and tube	2	3.50
Step ladder	2	56.50
Sledge hammer	2	10.00
Finishing trowel	4	6.30
Brick trowel	4	6.00
Margin trowel	2	2.10
Pointing trowel	2	2.10
Redwood float	4	1.50
Bricklayer's jointer	2	1.40
Cement edger	2	2.20
Cement groover	2	4.20
Plasterer's apprentice tool kit (option)	1	69.00
Bricklayer's apprentice tool kit (option)	1	47.50

ELECTRICAL/ELECTRONICS OCCUPATIONS

STANDARD EQUIPMENT AND TOOL LIST

Electrical and Electronics

Item	Quantity	Approximate Unit Cost
TESTING EQUIPMENT		
Vacuum tube voltmeter	8	$ 75.00
Peak to peak probe kit	1	7.30
R.F. probe kit	1	5.20
Audio generator (sine and square wave output)	1	75.00
Signal generator	4	75.00
Tube checker (transistor included)	4	115.45
Direct reading capacitor meter	1	41.95
Isolation transformer	2	8.39
Battery eliminator (10 amps continuous)	4	70.00
Multimeter with probes	8	75.00
Oscilloscope, 5"	1	150.00
Hydrometer	1	1.25
Speaker, 8" with cabinets	4	11.12
Microphone	1	12.95
Resistor decade box	1	26.20
Capacitor decade box	1	20.95
Headphone	8	5.00
GENERAL EQUIPMENT		
Generator, sweep/marker	1	200.00
Receiver, communication	1	319.51
Transmitter	1	440.55
(* 1 kit per 2 students)		
BENCH TOOLS (A set each for 8 benches)		
Pliers, 6" diagonal	8	2.90
Pliers, 6" long nose	8	2.24
Pliers, 8" side cutting	8	3.23
Pliers, 8" slip joint combination	8	1.62
Screwdriver, 3" and 6"	8 sets	1.50
Soldering iron, 125 watts	8	9.95
TOOLROOM TOOLS		
Alignment Tool kit	4	8.10
Awl, scratch	6	.83
Board, drawing, 18" x 24"	2	3.00
Bit, auger	1 set	22.50
Chisel, 1/2" cold	4	.50
Divider, wing, 8"	2	2.50
Drill, twist, 1 to 60 H.S.	1 set	8.00
Drill, twist, 1/16 to 1/2 H.S.	1 set	40.00
Drawing set	2	15.00
File card	4	.50
Files, 4" assorted needles	1 set	6.00

ELECTRICAL/ELECTRONICS OCCUPATIONS

STANDARD EQUIPMENT AND TOOL LIST

Electrical and Electronics

(continued)

Item	Quantity	Approximate Unit Cost
TOOLROOM TOOLS (continued)		
Gauge, wire, Starrett #282	1	$ 3.80
Gun, soldering, 125 watts	6	5.30
Hacksaw, 12"	2	2.04
Hammer, ball pein, 8 oz & 12 oz.	4 sets	2.75
Hammer, 16 oz., claw	1	3.75
Micrometer, 1"	1	19.00
Nippers, 12" cutting	1	3.64
Rule, 12" steel	4	1.85
Saw, rip, 7 pt., 26"	1	6.80
Saw, cross cut, 10 pt., 26"	1	6.80
Scale, architect's	2	.60
Screw plant, 4-36 to 1/4-20	1 set	37.50
Shield, face	2	3.00
Snip, aviation, cut left and cut right	2 sets	2.50
Square, 12" combination	1	3.50
Stone, combination oil	1	2.10
Stripper, wire	4	1.80
T-square, 24"	2	3.00
Triangle, 10", 30°/60° plastic	2	1.00
Triangle, 8", 45° plastic	2	1.00
Wrench, Allen	1 set	1.80
Wrench, adjustable, 4", 6", 8" 10"	1 set	8.50
SHOP EQUIPMENT		
Anvil, #50	1	70.00
Brake, 24" box and pan	1	400.00
Drill, 1/2" electric, portable	1	60.00
Drill, 1/4" electric, portable	2	35.00
Drill press, 12" bench	1	225.00
Grinder, 6" bench, w/eye shields	1	200.00
Shear, 36" squaring	1	450.00
Vise, drill press	1	45.00
Vise, machinist's, 3"	8	350.00
SPECIAL TOOLS AND EQUIPMENT NEEDED FOR ADDITIONAL SPECIFIC OCCUPATIONAL EXPERIENCES		
ELECTRICAL EQUIPMENT		
Demonstration Equipment	1 set	
Alternating Current Circuitry		280.00
Automotive Electricity		300.00
Chemistry & Electricity		165.00
Direct Current Circuitry		70.00
Electric Circuit		45.00
Electricity & Communications		290.00

ELECTRICAL/ELECTRONICS OCCUPATIONS

STANDARD EQUIPMENT AND TOOL LIST - Electrical and Electronics

(continued)

Item	Quantity	Approximate Unit Cost
ELECTRICAL EQUIPMENT		
Demonstration Equipment (continued)		
Electricity & Magnetism		$ 145.00
House Wiring Circuits		120.00
Motors & Generators		350.00
Electrical Training Equipment (set/2 students)	12 each	650.00
Power Supply	12	80.00
Science Apparatus	1 set	
Electro Magnetism Demonstrator		65.00
Resonance Demonstrator		150.00
St. Louis Motor		20.00
Transformer Principles		100.00
ELECTRONIC EQUIPMENT		
Audio Signal Generator Sine/Square Wave Output	12 each	100.00
Digital Computer Trainer	1	1,200.00
Electronic Training Equipment w/Power Supply	12 each	775.00
Electronic Demonstration Unit	1 each	
Amplifiers		200.00
Basic Tube Circuits		160.00
Oscillator Circuits		200.00
Power Supply Circuits		98.00
Radio Receiver Circuits		250.00
Radio Transmitter Circuits		325.00
Reactance Network		130.00
Resistance in Electronics		110.00
Semi-Conductor Circuits		200.00
Television Circuits		410.00
Oscilloscope w/probe	12	250.00
Portable Tube, Transistor and Diode Tester	1	285.00
RF Signal Generator	12	75.00
VOM (FET)	12	90.00
VTVM (FET)	12	125.00
Television Analyst	1	419.00
Capacitor Analyst	1	125.00

STANDARD EQUIPMENT AND TOOL LIST

Item	Quantity	Approximate Unit Cost
MINOR SHOP EQUIPMENT (continued)		
Battery hydrometer	1	$ 1.50
Battery syringe & water container	1	10.50
Cord, extension, 50 ft., 14/3	4	8.50
Cover, fender	4	10.00
Drill, H.S. twist, fractional, 1/16" to 1/2"	1	45.00
Drill, H.S. twist, numbered, 0 to 80	1	38.85
Gauge, screw thread	2	4.15
Gauge, flat feeler	1	2.50
Gauge, wire feeler	1	1.85
Gauge, cylinder	1	4.50
Gauge, tire, automatic	2	12.50
Gauge, compression	1	8.50
Magnet, permanent bar & u-type	2	4.50
Oiler, hand pump	6	2.10
Piston ring remover and installer	6	3.50
Hose, air, 5/6 x 24', w/quick coupling	4	9.50
TESTING EQUIPMENT		
Tester, distributor (points, dwell, spark, coil, condenser, oscilloscope)	1	930.00
Tester, motor analyzer (battery, RPM, vacuum, etc.)	1	2,000.00
Tester, power timing light	1	45.00
Tester, generator regulator	1	60.00
Tester, battery-starter circuit	1	80.00
Tester, spark plug (cleaner & tester)	1	59.00
Valve refacer	1	995.00
Valve seat grinder	1	385.00
Valve spring compressor	1	23.00
Valve spring tension tester	1	48.00
Volt Ohm Meter	1	90.00
HAND TOOLS		
Caliper, 6", 1.0	1	3.95
Caliper, 6", 0.0	1	3.95
Chisel, 1/4" cape	4	3.85
Chisel, 1/2" cold	4	3.50
Chisel, 1/4" diamond	2	1.80
Divider, 6"	2	3.95
Goggle, safety (per student)	2	3.80
Hacksaw	4	3.50
Hammer, ball pein, 12 oz. & 16 oz.	4 sets	6.00
Hammer, 16 oz., claw	2	4.35
Hammer, soft face	4	4.85

STANDARD EQUIPMENT AND TOOL LIST

(continued)

Item	Quantity	Approximate Unit Cost
HAND TOOLS (Continued)		
Pliers, 8" adjustable locking	4	$ 2.95
Pliers, 7" long-nose	4	3.15
Pliers, 6" & 8", combination, slip joint	6	16.50
Pliers, 7" diagonal cutter	4	3.50
Punch, 8" drive pin	4	1.10
Screwdriver, regular blade, 4", 6", 8" & 12"	5 sets	6.00
Screwdriver, stubby	1 set	2.35
Screwdriver, offset	1 set	4.10
Screwdriver, Phillips, #1, #2, #3, #4	1 set	2.90
Screw extractor (set of 6)	1 set	5.30
Scriber, 10" double point	4	1.95
Shield, face	6	6.50
Snip, aviation	1	4.80
Snip, tin, straight	2	6.85
Snip, curved	2	7.50
Soldering iron, 225 watt	2	16.50
Soldering gun, 150 to 250 watt	1	15.50
Square, 12" combination	2	16.50
Tap and die, machine screw, NC & NF, #6 to #12	1 set	75.00
Tap and die, National Stand, NC & NF, 1/4" to 1"	1 set	350.00
Tap and die, National Stand., pipe, 1/8" to 3/8"	1 set	50.00
Tape, 25' steel	1	6.50
Wrench, box, double offset, 3/16" to 1"	2 sets	32.50
Wrench, deep socket, 1/2" drive, 9/16" to 1"	2 sets	14.50
Wrench, drive adapter, 3/8" female & 1/2" male	2 sets	1.50
Wrench, elect., open double end, 13/64" to 3/8"	4 sets	10.00
Wrench, elect., socket, 13/64" to 3/8"	2 sets	6.80
Wrench, handle, 3/8" & 1/2" socket drive	2 sets	18.50
Wrench, handle, 3/8" & 1/2" flexible drive	2 sets	7.50
Wrench, handle, 3/8" & 1/2" speed drive	4 sets	6.50
Wrench, monkey, 10"	2	4.50
Wrench, open end, 3/16" to 1"	2 sets	14.50
Wrench, pipe, 10"	1	2.65
Wrench, socket, 3/8" drive, 3/8" to 3/4"	2 sets	8.95
Wrench, socket, 1/2" drive, 7/16" to 1-1/4"	2 sets	16.95
Wrench, tappet adjusting, 7/16" & 1/2"	2 sets	5.10
Wrench, torque, 3/8" drive, 0-25 ft./lb.	2	27.95
Wrench, torque, 1/2" drive, 0-150 ft./lb.	2	38.75
Wrench, universal joint, 3/8" & 1/2" drive	1	4.50
Wrench, vise-grip	3	2.45
Wrench, comb. 3/8" - 3/4"	3 sets	14.50
Wrench, socket, 1/4" drive	1 set	14.95
AUTOMOTIVE COMPONENTS & EDUCATIONAL UNITS		
Brake assembly, front and rear	1	25.00
Carburetor, current model	5	15.00

Item	Quantity	Approximate Unit Cost
AUTOMOTIVE COMPONENTS & EDUCATIONAL UNIT (cont.)		
Chassis, passenger car	1	$ 35.00
Cylinder head	1	8.00
Differential carrier assemblies, conventional	2	35.00
Distributor, current model	2	40.00
Engine, 6-cylinder, overhead valve	1	80.00
Engine, 6-cylinder, L-head	1	80.00
Engine, 8-cylinder, V-type	1	80.00
Engine, cut-away	1	80.00
Fuel pump, current model	2	6.50
Generator, D.C., 6 and 12 volts	1	15.00
Generator, A.C., high output self-rectified	1	35.00
Ignition coil, current model	2	8.50
Ignition condenser, current model	2	5.00
Regulator	2	7.50
Starting motor	2	30.00
Steering gear assembly, convention & power	1	35.00
Transmission assembly, conventional, overdrive and automatic	1 each	45.00
SPECIAL TOOLS AND EQUIPMENT NEEDED FOR ADDITIONAL SPECIFIC OCCUPATIONAL EXPERIENCES		
Air sander, disc	3	85.00
Air sander, orbital	3	75.00
Automotive tools panels	1 set	1,500.00
Battery charger	1	150.00
Clutch coupling	1	150.00
Diesel engine	1	450.00
Differential gear	1	135.00
Distributor tester	1	825.00
Drill, 3/8" portable	2	120.00
Engine stand, universal	3	200.00
Four-stroke engine	1	95.00
Four-stroke diesel engine	1	125.00
Fuel cell test unit	1	100.00
Hydraulic disc brake	1	250.00
Ignition simulator	1	250.00
Model chassis w/glass motor	1	650.00
Motor dynamometer	1	800.00
Refrigeration & air-conditioning training units (basic unit/test equipment)	1	1,750.00
Service jack	2	200.00
Small engine	6	60.00
Small engine dynamometer	1	400.00
Solar cell test unit	1	100.00
Standard transmission	1	185.00
Starter battery	1	65.00
Steam cleaner	1	550.00

STANDARD EQUIPMENT AND TOOL LIST

(continued)

Item	Quantity	Approximate Unit Cost
SPECIAL TOOLS AND EQUIPMENT NEEDED FOR ADDITIONAL SPECIFIC OCCUPATIONAL EXPERIENCES		
Steam engine	1	$ 125.00
Steering	1	125.00
Thermo-electric generator	1	280.00
Two-stroke engine	1	80.00
Valve refacer	1	650.00
Valve seat grinder	1	280.00
Wankel motor	1	185.00
Wet and dry vacuum unit	1	150.00
Wheel balancing equipment (Dynamic)	1	700.00
Automotive spray booth unit (if not built in)	1	5,600.00
Tire changer (air/electric)	1	600.00
Wheel alignment	1	2,400.00

MECHANICAL OCCUPATIONS

STANDARD EQUIPMENT AND TOOL LIST

Metal Processing and Fabrication

Item	Quantity	Approximate Unit Cost
MACHINE SHOP EQUIPMENT		
Arbor press, 3-ton	1	$ 170.00
Compressor, air, 3 hp.	1	750.00
Drill press, bench, 10"	1	300.00
Drill press, 17" floor model, #3M.T.	1	265.00
Lathe, 9" metal, compl. w/accessories	2	1,500.00
Lathe, 10" metal, compl. w/accessories	1	2,800.00
Power hacksaw, 4" to 6"	1	525.00
Vertical mill, compl. w/accessories	1	1,500.00
Vise, machinist's 3½" swivel	12	65.00
Vise, machinist's 4" swivel	4	82.00
Vise, drill press, 4" to 6"	1	68.00
Grinder, 8" pedestal, w/shields	1	300.00
SHEETMETAL EQUIPMENT		
Bench plate	2	85.00
Bender, 6" radius cap., 1/2"	1	465.00
Brake, box and pan, 24" or 36"	1	550.00
Former, 36" slip roll	1	295.00
Rivet gun	2	32.00
Rotary combination machine w/accessories	1	125.00
Rotary machine, universal, w/accessories	1	157.00
Shear, 36" squaring	1	550.00
Spot welder (resistance)	1	750.00
Spray gun, compl. w/hose & regulator	1 set	150.00
Stake, beakhorn	1	95.00
Stake, blowhorn	1	50.00
Stake, candle mold	1	48.00
Stake, creasing	1	72.00
Stake, conductor	1	54.00
Stake, double seaming	1	68.00
Stake, hollow mandrel, 48"	1	80.00
Stake, squaring	1	37.00
Folder, bar, 30" Pexto #63		375.00
WELDING EQUIPMENT		
Arc welder, AC/DC, 180-200 amp., compl.w/access.	1	425.00
Clamp, C, heavy-duty, 6"	6	2.80
Cleaning tool, welder's	2	1.50
Gas welding unit, oxy-acetylene, compl. w/accessories & cart	2 sets	550.00
Goggles, welder's, w/lenses	6	4.00
Helmet, welding	4	15.00
Spring clamp, 2"	6	.75
Tip cleaner	2 sets	2.00
Torch lighter, w/flints	2	1.40

Item	Quantity	Approximate Unit Cost
FORGING AND WROUGHT IRON EQUIPMENT		
Anvil, 70 lb.	2	$ 65.00
Furnace, combination gas	2	52.00
Furnace, heat treating	1	75.00
Tongs, curved	1	6.40
Tongs, flat	1	6.85
Tongs, pick-up	1	6.95
ART METAL EQUIPMENT		
Anvil, round and square head	1	35.00
Buffing machine	1	90.00
Chisels, assorted	1 set	18.00
Hammers, assorted	1 set	32.00
Lathe, metal spinning, compl. w/accessories	1	335.00
Mallets, assorted	1 set	20.00
Saw, jeweler's	2	2.40
PLANNING AND DESIGNING EQUIPMENT		
Board, drawing, 18" x 24"	5	4.00
Compass, bow, 6"	5	4.10
Divider, 6"	5	4.10
T-square, 24"	5	4.10
Triangle, 45°, 8"	5	1.25
Triangle, 30°/60°, 10"	5	1.25
HAND TOOLS		
Awl, scratch	8	1.15
Bar, crow	1	3.00
Brush, wire	5	.90
Caliper, outside, 8" & 4"	2 sets	9.50
Caliper, inside, 8" & 4"	2 sets	9.00
Caliper, micrometer, outside, 1"	2	25.00
Caliper, micrometer, outside, 2"	1	32.00
Caliper, micrometer, outside, 2" - 3"	1	70.00
Caliper, micrometer, inside, 2" - 4"	1	68.00
Card, file or wire brush	4	.95
Chisel, cape, 5/16"	1	.95
Chisel, cold, 1/4", 3/4", & 1/2"	4 sets	2.50
Chisel, cold, 5/8" & 3/4"	2 sets	2.50
Chisel, diamond point, 1/4"	1	.92
Clamp, handy, #3	2	2.95
Clamp, C, 3", 6" & 8"	4 sets	8.50
Clipper, bolt, 36"	1	35.00
Cutter, glass	1	1.10
Dies, pipe, 1/8" to 3/4"	1 set	75.00

Item	Quantity	Approximate Unit Cost
Divider, spring joint, 6" or 8"	2	$ 6.40
Divider, spring joint, 4"	1	5.10
Drill, portable, electric, 1/4" cap.	1	54.00
Drill, portable, electric, 3/8" cap.	1	75.00
Drill, portable, electric, 1/2" cap.	1	95.00
Drill, hand	2	6.95
Drill, masonry, 1/4", 3/8", 1/2"	1 set	6.00
Drill, twist, 1/16" to 1/2" H.S.	2 sets	45.00
Drill, twist, #1 to #60 H.S.	1 set	27.50
Drill, combination countersink	1 set	11.15
Dresser, grinding wheel	1	3.00
File, flat, bastard, 10" and 12"	2 sets	2.50
File, flat, second cut, 8" and 10"	2 sets	1.75
File, flat, smooth, 10" and 12"	6 sets	2.30
File, flat, half-round, bastard, 8"	2	.85
File, flat, half-round, second cut, 8"	2	.95
File, flat, mill-smooth, 10"	2	.85
File, flat, round, bastard, 8"	2	.65
File, flat, round, smooth, 8"	2	.75
File, slim taper, 6"	2	.50
File, square, bastard, 8"	2	.75
Gage, center	3	4.20
Gage, screw pitch	1	3.20
Gage, surface	1	7.95
Gage, thickness	1	3.35
Gage, tap and drill	1	8.50
Gage, wire	1	6.40
Grinder, disc, portable, electric, 7"	1	120.00
Groover, hand, #2, #4	1	4.40
Hacksaw, frame, 10"-12"	6	3.50
Hammer, ball pein, 8 oz., 12 oz., 16 oz.	4 sets	8.10
Hammer, ball pein, 20 oz.	1	3.15
Hammer, cross pein, 16 oz.	1	3.75
Hammer, blacksmith, 2-1/2 lbs.	1	3.30
Hammer, soft face, 16 oz.	1	2.75
Hammer, rivetting	4	3.15
Hammer, setting	4	3.50
Hammer, sledge, 3-4 lbs.	1	4.75
Jigsaw, portable, electric	1	110.00
Letter, steel, and figures, 1/4" (each)	1 set	18.50
Mallet, hickory, 3" face	2	.95
Mallet, rawhide or rubber	2	2.45
Oiler, 1/2 pt., 4" spout	4	.75
Oiler, squirt	2	.75
Pliers, combination, 8" and 10"	2 sets	3.80
Pliers, diagnol, 7"	2	2.50
Pliers, side cutting, 7"	2	2.75
Pliers, needle nose, 6"	2	2.40

STANDARD EQUIPMENT AND TOOL LIST

Metal Processing and Fabrication

(continued)

Item	Quantity	Approximate Unit Cost
Punch, center, 3/8" and 1/2"	4	$ 4.75
Punch, prick, 3/8" and 1/2"	3	2.95
Punch, taper, 3/32" x 1/4"	1	6.75
Punch, pin, 1/8" and 5/16"	1	4.15
Punch, hollow, 1/2" and 3/4"	1	9.65
Reamer, pipe	1	24.50
Reamers, hand, 1/4" to 3/4"	1 set	2.50
Rivet set, #3, #4, #5, #6	1	4.95
Rule, steel, 12"	12	3.45
Rule, narrow steel	3	2.10
Rule, circumference, 48"	1	8.95
Respirator	1	4.50
Screwdriver, 1", 4", 6", 10"	2 sets	4.75
Screwdriver, stubby	1	1.65
Screwdriver, offset	1	.95
Screwdriver, Phillips #1 to #4	1 set	2.50
Screw plate, NC & NF, #1 to #12	1 set	65.20
Seamer, tinner's, handy	2	5.95
Soldering copper, 1 lb.	3	1.35
Soldering iron, electric, 1/2" tip	3	8.45
Soldering iron, electric, 7/8" tip	1	12.50
Snips, tin, curved	1 pair	7.45
Snips, hawk bill	1 pair	8.50
Snips, compound	1 pair	4.10
Snips, tin, 12-1/2"	4 pairs	3.64
Snips, aviation M-1, M-2, M-3	1	3.75
Square, combination, 12" blade	3	2.05
Square, framing, 24"	2	4.65
Square, T-bevel, 6"	2	2.80
Tap and die, N.C. 1/4" to 1"	1 set	160.00
Tap and die, N.F. 1/4" to 1"	1 set	160.00
Torch, blow or propane	1	6.95
Vise, pipe, 1/8" - 2-1/2"	1	16.50
Vise grips	4	3.85
Wrench, Allen	1 set	2.65
Wrench, crescent, 6", 8", 10" 12"	2 sets	12.00
Wrench, box end, 1/4" - 1-1/4"	1 set	45.60
Wrench, open end, 1/4" - 1-1/4"	1 set	28.75
Wrench, pipe, 10", 12", 14"	1 set	14.75
Wrench, socket, 1/4" to 1"	1 set	32.50
Wrench, monkey, 12"	1	3.95
Bandsaw, metal cutting, 14		435.00
SPECIAL TOOLS AND EQUIPMENT NEEDED FOR ADDITIONAL SPECIFIC OCCUPATIONAL EXPERIENCES		
Bend tester	1	140.00
Cut-off shears	1	90.00

MECHANICAL OCCUPATIONS

STANDARD EQUIPMENT AND TOOL LIST

Metal Processing and Fabrication

(continued)

Item	Quantity	Approximate Unit Cost
Electric welder, 300 Amp AC/DC	1	$ 550.00
Gas welding unit (4 stations) (additional units needed)	2 sets	550.00
Geared head metal lathe, 13"	2	3,500.00
Hand tools (additional needed)	1 set	1,200.00
Hardness tester	1	600.00
Metal bender	1	450.00
Metal cutting bandsaw	1	950.00
Notcher	1	350.00
Portable nibblers	1	160.00
Portable shears	1	135.00
Tig welder, AC/DC	1	1,500.00
Turret punch press	1	1,050.00
Universal Brake, 48"	1	700.00

TECHNICAL GRAPHICS OCCUPATIONS

Graphic Arts Technology

STANDARD EQUIPMENT AND TOOL LIST

Item	Quantity	Approximate Unit Cost
BOOK BINDING UNIT EQUIPMENT		
Bench, work, 24" x 48"	1	$ 250.00
Board, sewing frame, w/upright & cross bar	1	25.00
Cutter, paper, 30" to 36"	1	1,585.00
Cutter, board, 30" to 36"	1	700.00
Drill, hand	1	12.00
Drill, paper, 1/4 hp.	1	157.00
Folder	1	560.31
Folder, bone (per student)	1	1.00
Hammer, backing	1	6.00
Knife, bending (per student)	1	2.00
Perforator	1	14.00
Pot, steel, dechic, 1 qt., w/brush, 1"	1	31.60
Press, backing	1	1,500.00
Press, bold stamping	1	600.00
Press, standing	1	375.00
Ruler, steel, 12" (per student)	1	3.30
Scissors, 8" to 10" (per student)	1	1.80
Square, steel, 12" x 7"	1	4.00
Stitcher, wire, 1/2 foot operated	1	131.00
SILK SCREEN UNIT EQUIPMENT		
Frame, printing, 12" x 18", #12 silk	2	20.00
Frame, printing, 9" x 12", #12 silk	2	18.00
Squeegee, 8" & 11"	2	10.00
LETTERPRESS UNIT EQUIPMENT		
Cabinet, roller and ink	1	465.00
Cabinet, type, w/double-tier working top: 24 California job case each	4	849.00
Gage, line, 12" 614	12	2.35
Galley, steel, 8-3/4" x 13"	30	1.07
Knife, ink, square ends, 8"	4	3.05
Mallet, printer's, hickory, medium	1	3.85
Mitering machine, hand operated	1	107.80
Planer, proof, 3-1/4" x 8", leather top	1	2.45
Press, platen, 8" x 12", w/rollers	1	1,934.00
Press, platen, 10" x 15", w/rollers	1	2,334.00
Press, proof, 16" x 21"	1	460.00
Quoins, 4-1/2"	24	4.35
Quoin key, T-head	4	3.50
Stick, composing, 6" x 2", ss	12 sets	10.15
Stick, composing, 10" x 2"	2	12.55
Table, imposing, 51" x 39", w/storage space for galley, chases and furniture	1	860.00
Table makeready, 32" x 17", tilt top	1	250.00

Graphic Arts Technology

STANDARD EQUIPMENT AND TOOL LIST

(continued)

Item	Quantity	Approximate Unit Cost
TYPE AND SPACING MATERIAL EQUIPMENT		
Font, Modern Gothic, 6 to 30 points	1	$ 139.00
Font, Standard Text, 10 to 36 points	1	117.00
Font, Modern Script, 14 & 18 points	1	48.00
Font, miscellaneous boarders, decoration and initials	1	150.00
Furniture, assorted	1 set	106.00
Lead, 2 points	100 lbs.	70.00
Rule, 2 points size w/1/4" point face	1	.65 lb
Rule, 2 points size w/1" point face	1	.65 lb
Slug, 6 points	100 lbs.	70.00
Spaces, assorted, for every size type	100 lbs.	37.00
Type face, standard, complete family, 60 to 30 points	1 font ea.	115.00
OFFSET UNIT EQUIPMENT		
Box, print, 7" x 9"	1	65.00
Camera, 24" x 24", complete lens and copy holder	1	2,400.00
Drafting equipment, complete	1 set	11.50
Frame, vacuum print, 20" x 23"	1	275.00
Enlarger	1	175.00
Lamp, carbon arc, 35 amp.	2	300.00
Lamp, carbon car, single unit	1	300.00
Press, offset printing	1	3,600.00
Refrigerator, electric, 5 to 7 cu. ft.	1	25.00
Sink, film developing, 3 compartments	1	1,200.00
Sink, place developing	1	600.00
Table, layout, 32" x 42"	1	300.00
Table, utility (for stripping, opaquing, etc.)	1	300.00
Table, drafting	1	106.50
Timer, clock, darkroom	1	28.00
TOOLS		
Can, benzine, pint	3	4.75
Can, benzine, 5 gallons	1	11.50
Can, oil	1	2.50
Can, waste	1	5.50
Gun, grease	1	6.50
Hammer, ball pein, 12 oz.	1	2.20
Hammer, claw, 16 oz.	1	3.80
Hammer, soft face, 13 oz.	1	2.29
Pliers, combination, 8"	1	1.81
Pliers, long-nose, 7"	1	2.20
Saw, 8 or 10 pt.	1	6.80
Screwdriver, 4", 6", 8"	1	5.60

STANDARD EQUIPMENT AND TOOL LIST

(continued)

Item	Quantity	Approximate Unit Cost
Screwdriver, Phillips, #1, #2, #3	1	$ 2.11
Snip, tin, combination	1	4.20
Wrench, socket, 1/4" to 1"	1 set	22.75
Wrench, open end, 1/4" to 1"	1 set	2.53
Wrench, socket, Allen	1 set	1.09
SPECIAL TOOLS AND EQUIPMENT NEEDED FOR		
ADDITIONAL SPECIFIC OCCUPATIONAL EXPERIENCES		
Airbrush	1	45.00
Binding Unit, plastics	1	248.00
Camera, copying	1	7,000.00
Camera, reflex, twin lens	2	150.00
Cutter, lead and slug	1	63.00
Cutter, round corner	1	45.75
Densitometer, photo	1	1,200.00
Drill, electric, portable, 1/4"	1	45.00
Dryer, print	1	227.00
Duplicating machine, stencil	1	430.00
Duplicating machine, spirit	1	250.00
Filter, photo (set)	1	2.50
Folding machine (office)	1	400.00
Hot plate, electric	1	32.50
Imposing stone table	1	935.00
Jogger, paper	1	750.00
Meter, light	1	35.00
Mitering machine	1	95.00
Numbering machine, cleaner box	1	34.00
Numbering machine, hand	1	15.75
Number machine, press	2	25.00
Perforator	1	1,200.00
Planer, type	4	10.00
Plate-maker	1	1,500.00
Press, copying	1	97.00
Press, hot stamping	1	7,500.00
Press, offset (17" x 22")	1	17,000.00
Press, padding	1	25.00
Press, platen, automatic feed	1	4,000.00
Press proof, reproduction	1	2,000.00
Press, rubber stamp	1	224.50
Printer, contact	1	50.00
Printmaker, graphic arts	1	700.50
Punch, paper	1	31.50
Quoin, Hi-speed	48	9.20
Quoin key, Hi-speed	4	6.95
Sink, platemaking	1	320.00
Stapler, saddle or side	1	1,200.00
Glue pot	1	25.45

Graphic Arts Technology

STANDARD EQUIPMENT AND TOOL LIST

(continued)

Item	Quantity	Approximate Unit Cost
Tanks, film development	5	$ 25.00
Thermometer, photographic	2	2.50
Timer, photographic, electric	2	25.00
Timer, photographic, spring wound	2	15.00
Tray, photographic	12	10.00
Trimmer, paper	1	129.00
Truck, bindery	1	250.00
Type, assorted		2,500.00
Typesetter, photoheadsetter	1	500.00
Typewriter, electric	1	385.00

STANDARD EQUIPMENT AND TOOL LIST

Item	Quantity	Approximate Unit Cost
INSTRUMENTS & TOOLS		
Blackboard set	1	$ 9.50
Board, drawing, 18" x 24" (per student)	200	2.95
Caliper, 6" inside and outside	2 sets	4.60
Caliper, vernier	1	11.00
Caliper, micrometer	1	19.00
Chalkboard machine	1	250.00
Compass, 6-1/2"	30	3.70
Compass, 4-1/2" bow	30	3.48
Compass, 9" to 12" beam	1	9.00
Cutter, paper, 24"	1	45.00
Curve, French	1 set	20.00
Dust brushes	30	.76
Drafting machine, 16"	4	65.00
Lettering set	1	60.00
Mobile parallel ruling units	2	25.00
Pencil sharpener, draftsman's	1	6.60
Protractor, circular	2	2.00
Reproduction Machine, comb. printer/developer	1	800.00
Scale, architectual triangular, 12"	30	2.00
Scale, engineer's, 12"	2	1.00
Shears, trimming, 14"	1	10.50
Triangle, 10", 30°/60°	30	.56
Triangle, 8", 45°/90°	30	.56
T-square, 24"	30	2.95
Board, drawing, 23" x 31"	30	5.50
Divider, 6", F328	30	3.70
Demonstration scale, #2332	1	8.75
T-square, 30"	1	5.50
SPECIAL TOOLS AND EQUIPMENT NEEDED FOR		
ADDITIONAL SPECIFIC OCCUPATIONAL EXPERIENCES		
Chalkboard drafting machine	1	350.00
Drafting machine, 16" and 18"	12	82.00
Drawing board with parallel ruling, straight edge	12	25.00
Lettering equipment	3	120.00
Multi-student drafting table (10-drawer unit, 2 wings)	12	350.00
Overhead projector, screen and portable stand	1 unit	250.00
Perspective drawing board	6	35.00
Transparencies	1 set	250.00

EXHIBIT E

VOCATIONAL-TECHNICAL COURSES OF STUDY

AVAILABLE IN THE

HAWAII SECONDARY SCHOOL PROGRAM

VOCATIONAL-TECHNICAL COURSES OF STUDY AVAILABLE IN THE HAWAII SECONDARY SCHOOL PROGRAM

The courses of study identified here under eight large families of occupations are for high school students in grades 10-12 in the Vocational-Technical Education Programs for the State of Hawaii. The families of occupations are those in which the post-secondary institutions of the State have offerings for specialization and in which the greatest employment opportunities are found. The hierarchy of career opportunities listed include those requiring minimal skills to those classified as managerial, professional and scientific. Students wishing to take advantage of these offerings should consult their school counselor.

FAMILIES OF OCCUPATIONS:	BUSINESS OCCUPATIONS	PERSONAL/PUBLIC SERVICE OCCUPATIONS	HEALTH OCCUPATIONS
POST-SECONDARY COURSES OF STUDY AVAILABLE IN PUBLIC POST-SECONDARY INSTITUTIONS (Key-- H-- Honolulu Community College HC-- Hawaii Community College Kap-- Kapiolani Community College K-- Kauai Community College L-- Leeward Community College M-- Maui Community College W-- Windward Community College	Accounting (Kap) (M) (K) (L) (HC) (W) Business Machines (Kap) (W) (HC) Business Operations (Kap) Clerical (K) (HC) (Kap) Clerical-Bookkeeping (Kap) Clerical-Stenography (Kap)* Computer Science (L) (W) Data Processing (Kap) (HC) General Business (K) (Kap) (HC) General Office (M) Management (L) (W) (H) Mid-Management, Merchandising (Kap) (HC) Mid-Management, Hotel Service (Kap) Agriculture (HC) Business (M) (L) (W) Office Procedures (Kap) (HC) (W) Secretarial Science (Kap) (M) (K) (L) (HC)* Shorthand (HC) (W) (Kap) (K) (M) (L) Typewriting (Kap) (W) (K) (M) (L) (HC) Distributive Education (M)	Apparel Design & Construction (M) (HC) Cosmetology (H) Educational Assistant (M) Fashion Arts (H) Fire Science (H) (K) (HC) Hotel Operations (M) Industrial Education (H) (Teacher Prep) *Library Technology (L) Police Science (H) (K) (HC) (M) Recreational Instructors (L) *Social Services Aide (M)	Dental Assisting (Kap) Health Aide (M) Medical Assisting (Kap) Nursing, Technical (M) Practical Nursing (Kap) (HC) (K) Radiologic Technician (Kap) Medical Laboratory Technician (Kap) Nurses Aide Training (Kap) Respiratory Therapy (Kap) Occupational Therapy Assistant (Kap) Health Foundations (Kap)
I. SECONDARY SCHOOL COURSES OF STUDY IN **PREPARATORY VOCATIONAL-TECHNICAL PROGRAM** ELEMENT SUB-ELEMENTS A. PRE-INDUSTRIAL PREPARATION AND B. INTRODUCTION TO VOCATIONS (Key-- Italicized courses are new courses or revised and renamed courses - One Semester Courses * Courses to be correlated with major courses)	**OFFICE** Requirements to Graduate *English 3 units Social Studies 3 units Physical Educ. ½ unit Health ½ unit Basic Courses General Business Beginning Typing *Mathematics Speech Fundamentals *English *Career Development* *Science Major Introduction to Data Processing* Advanced Typing Beginning Shorthand Advanced Shorthand Beginning Accounting Advanced Accounting Cooperative Office Education Electives Office Practice-Business Machines Business Law Personality & Dress Management & Family Economics **DISTRIBUTIVE** Requirements to Graduate *English 3 units Social Studies 3 units Physical Educ. ½ unit Health ½ unit Basic Courses *Career Development* General Business Speech Fundamentals *Mathematics Economics *Science Major Option I *Introduction to Sales and Marketing* Introduction to Data Processing Cooperative Distributive Education Option II *Introduction to Sales and Marketing* Introduction to Data Processing *Agricultural Technology I* *Agricultural Technology II (Including Cooperative Work Experience)* Option III *Ornamental Horticulture I* *Ornamental Horticulture II (Including Cooperative Work Experience)* Electives Business Law Beginning Typing Beginning Accounting Advertising Art Management & Family Economics Personality and Dress Office Practice & Business Machines *Chemistry (For Option II Only)	**PERSONAL SERVICE** Requirements to Graduate *English 3 units Social Studies 3 units Physical Educ. ½ unit Health ½ unit Basic Courses *Mathematics Management & Family Economics Psychology Speech Fundamentals *Career Development* *Science Child Care & Development (For Option II Only) Major Option I — *HOTEL & MOTEL HOUSEKEEPING (Including Cooperative Work Experience)* Option II — *CHILD CARE SERVICES (Including Cooperative Work Experience)* Electives Personality & Dress Family Foods (For Option II Only) Home Nursing (For Option II Only) Art General Business **PUBLIC SERVICE** Requirements to Graduate *English 3 units Social Studies 3 units Physical Educ. ½ unit Health ½ unit Basic Courses Beginning Typing Speech Fundamentals *Career Development* *Mathematics *Science Major *Human Services Aides (Including Cooperative Work Experience)* Electives Management & Family Economics Personality and Dress Psychology or Family Living	**MEDICAL & DENTAL ASSISTANTS** Requirements to Graduate *English 3 units Social Studies 3 units Physical Educ. ½ unit Health ½ unit Basic Courses Beginning Typing Speech Fundamentals Psychology *Mathematics *Science* *Career Development* Major *Medical-Dental Assistant (Including Cooperative Work Experience)* Electives Beginning Accounting Management & Family Economics Personality & Dress Office Practice & Business Machines **NURSING** Requirements to Graduate *English 3 units Social Studies 3 units Physical Educ. ½ unit Health ½ unit Basic Courses Speech Fundamentals Psychology or Family Living *Mathematics *Biology Family Foods Child Care & Development *Career Development* Major *NURSES AIDE I (Including Cooperative Work Experience)* Electives Chemistry Beginning Typing Management & Family Economics **TECHNICIAN** Requirements to Graduate *English 3 units Social Studies 3 units Physical Educ. ½ unit Health ½ unit Basic Courses *Human Physiology *Algebra 1 & 2 Geometry, Plane & Solid *Technical Science* Beginning Typing *Career Development* Major *Technicians Aide I (Including Cooperative Work Experience)* Electives Speech Fundamentals *Chemistry General Business Psychology Economics

FAMILIES OF OCCUPATIONS:

POST-SECONDARY COURSES OF STUDY AVAILABLE IN PUBLIC POST-SECONDARY INSTITUTIONS

(Key:
H - Honolulu Community College
HC - Hawaii Community College
Kap - Kapiolani Community College
K - Kauai Community College
L - Leeward Community College
M - Maui Community College
W - Windward Community College

1 SECONDARY SCHOOL COURSES OF STUDY IN **PREPARATORY VOCATIONAL-TECHNICAL PROGRAM** ELEMENT

SUB-ELEMENTS

A PRE-INDUSTRIAL PREPARATION

AND

B INTRODUCTION TO VOCATIONS

(Key:
Italicized courses are new courses or revised and renamed courses
/ One Semester Courses
* Courses to be correlated with major courses)

FOOD SERVICE OCCUPATIONS

Commercial Baking (H)
Food Service (Kap) (HC)
- Food Services—Culinary Arts
- Food Services—Dining Room
- Food Services/Mid-Management

Hospitality Education (L)

FOOD SERVICE
Requirements to Graduate:
*English 3 units
Social Studies 3 units
Physical Educ ½ unit
Health ½ unit

Basic Courses:
*Mathematics
Speech Fundamentals/
Career Development
Management & Family Economics/
Personality & Dress/
Science

Majors:
Food Service I (Nutrition/Basic Food Preparation)
Food Service II (Food Management-Preparation-Service including Cooperative Work Experience)

Electives:
Art
Family Living/
Economics
Psychology
General Business
Hawaiiana
Chemistry

ELECTRICAL/ ELECTRONICS OCCUPATIONS

Electronics Technology (H) (HC)
Electricity (HC) (K)
Industrial Electricity (H)

ELECTRICAL
Requirements to Graduate:
*English 3 units
Social Studies 3 units
Physical Educ ½ unit
Health ½ unit

Basic Courses:
Career Development
**Technical Science*
Electricity

Major:
Technical Sketching & Interpretation
Electrical Technology I
Electrical Technology II (Including Cooperative Work Experience)

Electives:
Speech Fundamentals/
Graphic Arts
Mathematics
Mechanical Drafting
Family Living/

ELECTRONICS
Requirements to Graduate:
*English 3 units
Social Studies 3 units
Physical Educ ½ unit
Health ½ unit

Basic Courses:
Career Development
**Technical Science*
Electronics
*Algebra 1 & 2

Major:
Technical Sketching & Interpretation
Electronic Technology I
Electronic Technology II (Including Cooperative Work Experience)

Electives:
Speech Fundamentals/
Graphic Arts
*Mathematics
Mechanical Drafting
Family Living/

CONSTRUCTION/CIVIL TECHNOLOGY OCCUPATIONS

Carpentry (H) (HC) (K) (M)
Engineering Technology (H)
Construction Materials Analysis (K)
Building Maintenance (M)
Industrial Technology (M)

BUILDING CONSTRUCTION
Requirements to Graduate:
*English 3 units
Social Studies 3 units
Physical Educ ½ unit
Health ½ unit

Basic Courses:
Career Development
**Technical Science*
Woods
Mechanical Drawing
Geometry: Plane

Major:
Technical Sketching & Interpretation
Building Construction Technology I
Building Construction Technology II (Including Cooperative Work Experience)

Electives:
Speech Fundamentals/
Family Living/
Economics

MECHANICAL OCCUPATIONS

Aviation Maintenance Technology (H)
Auto Body Repair & Painting (M) (K) (HC) (H)
Automotive Mechanics Technology (H) (K) (M) (HC) (L)
Diesel Mechanics (HC)
Heavy Equipment Maintenance and Repair (H)
Machine Shop (K) (HC)
Machine Technology (M) (HC)
Marine Technology (L)
Refrigeration & Air Conditioning Technology (H)
Sheet Metal & Plastics Technology (H)
Welding (H) (K) (M)
Welding & Sheet Metal (HC)
Sheet Metal (M)

POWER AND MECHANICS
Requirements to Graduate:
*English 3 units
Social Studies 3 units
Physical Educ ½ unit
Health ½ unit

Basic Courses:
Career Development
**Technical Science*
Power Mechanics or Automotive Mechanics
Metals
*Mathematics

Major:
Technical Sketching & Interpretation
Power & Automotive Technology I
Power & Automotive Technology II (Including Cooperative Work Experience)

Electives:
Speech Fundamentals/

METAL PROCESSING & FABRICATION
Requirements to Graduate:
*English 3 units
Social Studies 3 units
Physical Educ ½ unit
Health ½ unit

Basic Courses:
*Mathematics
Metals
Career Development
**Technical Science*
Mechanical Drawing

Major:
Technical Sketching & Interpretation
Metals Technology I
Metals Technology II (Including Cooperative Work Experience)

Electives:
Speech Fundamentals/
Family Living/

TECHNICAL GRAPHICS OCCUPATIONS

Applied Arts (H)
Architectural Drafting Technology (H) (M)
Drafting & Engineering Aide (HC)
Drafting Technology (L) (K)
Blueprint Reading (H) (K) (M) (HC)

TECHNICAL GRAPHICS
Requirements to Graduate:
*English 3 units
Social Studies 3 units
Physical Educ ½ unit
Health ½ unit

*Basic Courses:
**Technical Science*
Mechanical Drawing
Graphic Arts
Design 1 & 2 (Art)
*Geometry

Major:
Option I
Graphic Arts Technology I
Graphic Arts Technology II (Including Cooperative Work Experience)
Option II
Drafting Technology I
Drafting Technology II (Including Cooperative Work Experience)

Electives:
Speech Fundamentals/
Family Living/

	BUSINESS OCCUPATIONS	PERSONAL/PUBLIC SERVICE OCCUPATIONS	HEALTH OCCUPATIONS
II. SECONDARY SCHOOL COURSES OF STUDY IN **OCCUPATIONAL SKILLS PROGRAM** ELEMENT	Clerical Services Related Sales Services	Supervised Child Care Service Home Services Clothing Construction & Maintenance Services Ground Maintenance Services Building Maintenance Services	
HIERARCHY OF CAREER OPPORTUNITIES	**OFFICE OCCUPATIONS** CLERICAL Messenger Clerks, Receptionist & Information Clerks, Mail, File or General Telephone Switchboard Operator Duplicating Machine Operator Key Punch Machine Operator Supervising Duplicating Machine Operator STENOGRAPHIC Clerk-Typist Typist Transcribing Machine Operator Stenographer Clerk Reporter Secretary Legal Stenographer Medical, Legal, Exec. Secretary Court Reporter ACCOUNTING Bookkeeping Clerk Bookkeeping Machine Operator Computing Machine Operator Bookkeeper Accountant Office Manager Comptroller Programmers Systems Analysts **DISTRIBUTIVE OCCUPATIONS** GENERAL DISTRIBUTIVE MAJOR Receptionist Stock Clerk Warehouseman Sales Clerk, Counter Teller Cashier Salesman Displayman Advertising Layout Man Buyer Assistant Manager, Manager AGRICULTURAL TECHNOLOGY MAJOR **Production** Farm Hand Irrigator Pest Controlman Machine & Equipment Maintenance Man Farm Equipment Operator Technicians Supervisors Managers Agriculture Teacher Extension Service Agent Animal Husbandryman Entomologist Agricultural Engineer Geneticist Conservationist Soil Scientist Agricultural Economist Agronomist Olericulturist Horticulturist **Processing** Graders Packers Cutters Technicians Inspectors Supervisors Consultants Managers Agricultural Engineer **Marketing** Deliveryman Warehouseman Salesman Technicians Supervisors Consultants Managers ORNAMENTAL HORTICULTURE MAJOR Groundskeeper Landscape Gardener Nursery Aide Tree Trimmer Nurseryman Greenskeeper Floral Designer Golf Course Superintendent Park & Ground Maintenance Supervisor Park Superintendent Landscape Contractor, Designer Horticulturist Extension Specialist Teacher Landscape Architect	**PERSONAL SERVICE** HOUSEKEEPING SERVICE Visiting Homemaker's Aide Homemaker's Assistant Hotel & Motel Housekeeper Visiting Homemaker Executive Housekeeper CHILD CARE Baby Sitter Nursery School Worker Assistant Supervisor of Day Care Center Nursery School Teacher Nursery School Administrator **PUBLIC SERVICE** Teacher's Aide Child Care Aide Social Services Aide Teacher Social Worker Administrator	**HEALTH OCCUPATIONS** Medical & Dental Receptionist Companion to the Elderly Hospital & Nursing Home Aides Medical & Dental Assistant Practical Nurse Medical & Dental Technician Dental Hygienist Registered Nurse Instructor Administrator Researcher Physician Surgeon

	FOOD SERVICE OCCUPATIONS	ELECTRICAL/ ELECTRONICS OCCUPATIONS	CONSTRUCTION/CIVIL TECHNOLOGY OCCUPATIONS	MECHANICAL OCCUPATIONS	TECHNICAL GRAPHICS OCCUPATIONS
SECONDARY SCHOOL COURSES OF STUDY OCCUPATIONAL SKILLS PROGRAM ELEMENT	Supervised Food Services		Shop and Building Maintenance Services General Construction Worker	Shop and Building Maintenance Services General Mechanical Worker	Shop and Building Maintenance Services
HIERARCHY OF CAREER OPPORTUNITIES	**FOOD SERVICE** Dishwasher Bus Boy Salad Maker Kitchen Helper Waiter/Waitress Dining Room Supervisor Cook, Baker, Caterer Food Service Supervisor School Lunch Manager Dining Room Manager Chef Food Service Manager Dietician	**ELECTRICAL/ELECTRONICS** ELECTRICAL OCCUPATIONS Electrician Helper Automotive Electrician Electrical Wireman Electrical Mechanic Electrical Instrument Repairman Electrical Inspector Electrical Equipment Tester Electric Power Superintendent Electrical Supervisor Electrical Contractor Electrolysis Engineer Industrial-Illuminating Engineer Electrical Engineer ELECTRONICS OCCUPATIONS Electronics Mechanic Helper Electronics Mechanic Electronics System Mechanic Electronics Equipment Mechanic Component Inspection Technician Computer Laboratory Technician Electronics Communication Technician Electronics Supervisor Electronics Computer Sub-assembly Foreman Electronics Maintenance Supervisor Radio Engineer Transmission Engineer Systems Engineer	**CONSTRUCTION/CIVIL TECHNOLOGY** BUILDING CONSTRUCTION Carpenter Helper Bus Carpenter Construction Worker Maintenance Carpenter Cabinetmaker Mason Plasterer Plumber Painter Glazier Shop Carpenter Structural Steel Inspector Building Construction Inspector Carpenter Foreman Construction Supervisor Construction Superintendent Civil Engineer Construction Engineer Structural Engineer	**MECHANICAL OCCUPATIONS** POWER MECHANICS Automobile Mechanic Helper Mechanic Helper Automobile Service Station Attendant Automobile Mechanic Mechanical Maintenance Man Automobile Tester Mechanical Technician Automotive Service Specialist Mechanical Engineering Technician Automotive Section Chief Automobile Mechanic Foreman Automotive Test Shop Supervisor Power Plant Engineer Automotive Engineer Mechanical Engineer METAL PROCESSING AND FABRICATION Machine Operator Helper Machine Operator Sheetmetal Layout Man Machine Builder Certified Welder Die Maker Toolmaker Metallurgist Plant Manager Production Superintendent Quality Control Director Industrial Engineer Manufacturing Engineer Tool Designer	**TECHNICAL GRAPHICS OCCUPATIONS** TECHNICAL GRAPHICS Print Shop Helper Draftsman Helper Hand Etcher Helper Draftsman Lithographer Printer Copy Cameraman Reproduction Technician Architectural Draftsman Advertising Manager Head Draftsman Lithographic Copy Preparer Industrial Designer Engineering Designer Architect

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